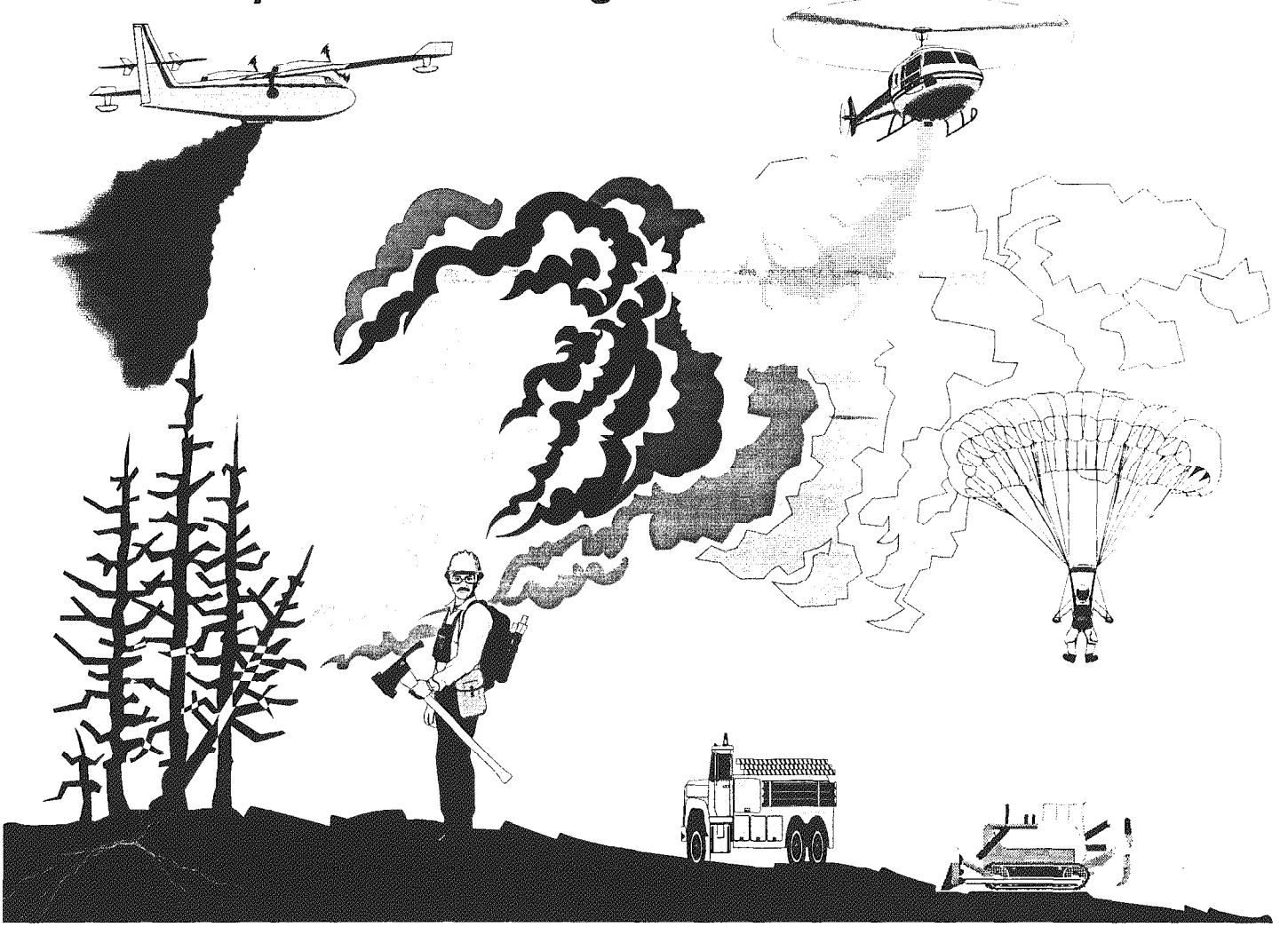
Salt Lake District
Bureau of Land Management
Proposed Fire Management Plan Amendment



Env. Assessment:	UT-020-98-08
Location:	Salt Lake District Office 2370 South 2300 West Salt Lake City, Utah 84119 (801) 977-4390
Project Type:	Fire Management Planning for the Salt Lake District
Date of Preparation:	April, 1998
District Manager:	Glenn Carpenter
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Pony Express Resource Management Plan (1990);
Box Elder Resource Management Plan (1986);
Isolated Tract Planning Analysis (1985);
Park City Management Framework Plan (1982); and
Randolph Management Framework Plan (1980)

APPROVED AMENDMENTS AND DECISION RECORD

EA # 020-98-08

Introduction

The purpose of this action is to amend the above-referenced planning documents to provide for the reintroduction of fire as a critical natural process into the ecosystem and provide a comprehensive and consistent policy of how wildland fires are handled for all public lands administered by the Salt Lake District.

Alternatives Analyzed

Four Alternatives were analyzed in the EA - (1) No Action, which continues current management strategies under the 1994 Fire Management Activity Plan (FMAP), (2) Proposed Action/Integrated Fire/Resource Management Plan, which emphasizes resource management goals, objectives, and concerns with fire management activities, (3) Maximum Wildland Fire and Vegetation/Fuels Management, which maximizes wildland fire and vegetation management in the ecosystem to reduce the number of large, damaging wildfires, (4) Minimum Wildland Fire Control and Vegetation/Fuels Management, which allows wildland fires to take a natural course in the ecosystem, with little action taken to reduce the size or frequency of fires, and (5) Aggressive Fire Control, which utilizes suppression strategies to minimize acreage burned with little to no rega. given to resource management objectives, resource constraints, or suppression costs.

Alternative Selected

The decision was made to select Alternative 2, Integrated Fire/Resource Management Plan. This plan includes wildland fire suppression and vegetation/fuel management. The key function of the wildland fire suppression are: 1) safely reintroduce fire into ecosystems to meet desired resource management objectives by utilizing the best science; 2) use wildland fire control and suppression strategies and tactics that emphasize resource management objectives while minimizing total fire management costs; and 3) utilize a fire suppression strategy that balances resource management objectives and goals for protecting values at risk while minimizing fire management costs. This alternative emphasizes vegetation/fuel management including prescribed fire, mechanical manipulation, fuelbreak establishment, and other strategies to reduce fire severity and occurrence and reduce hazardous fuel accumulation. Details of these actions may be found in the Proposed Fire Management Plan Amendment and EA #UT-020-98-08. Appendix A from this document is also included in the Salt Lake District Fire Management Plan, 1998.

Public Involvement

The public was involved in the development of this plan. Their participation is listed in EA #020-98-08, Chapter 5. The public was notified of their right to protest the proposed plan through the *Federal Register* and letters. The protest period ended on July 15, 1998. No protests were received. The State of Utah reviewed the proposed plan through the Resource Development Coordinating Committee and found that the proposed actions are not inconsistent with any state plans, programs, or policies.

Decision Record Sheet

Pony Express Resource Management Plan (1990);
Box Elder Resource Management Plan (1986);
Isolated Tract Planning Analysis (1985);
Park City Management Framework Plan (1982); and
Randolph Management Framework Plan (1980)
Salt Lake District
Bureau of Land Management

We have reviewed and approved for implementation the proposed decisions of the Pony Express Resource Management Plan, Box Elder Resource Management Plan, Isolated Tract Planning Analysis, Park City Management Framework Plan, and Randolph Management Framework Plan Amendments. The above decision was made to specifically address the reintroduction of fire as a critical natural process into the ecosystem and provide a comprehensive and consistent policy of how fires are handled for all public lands administered by the Salt Lake District.

Glenn A. Carpenter
District Manager

7/20/98
Date

G. William Lamb
State Director, Utah

7/27/98
Date

Proposed
Finding of No Significant Impact

for the
PROPOSED AMENDMENTS
to
Salt Lake District

Pony Express Resource Management Plan (1990);
Box Elder Resource Management Plan (1986);
Isolated Tract Planning Analysis (1985);
Park City Management Framework Plan (1982); and
Randolph Management Framework Plan (1980).

Based on the analysis provided in Environmental Assessment No. UT-020-98-08 (attached), I conclude that the Proposed Amendment to the above mentioned land use management plans within the Salt Lake District will not create significant impacts to the human environment and therefore an Environmental Impact Statement is not required.

This proposed amendment specifically addresses the reintroduction of fire as a critical natural process in the ecosystem and provides a comprehensive and consistent policy of how fires are handled for all public lands administered by the District. Additionally, this EA includes fuel management with consideration for hazard reduction projects and creation of fuel breaks through natural and prescribed fires, or mechanical and/or chemical vegetation manipulation.

Steven A Carpenter

District Manager
Salt Lake District
Bureau of Land Management

June 4, 1998
Date

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LIST OF ACRONYMS:

ACEC	Area of Critical Environmental Concern
AUM	Animal Unit Month
BLM	Bureau of Land Management
CCC	Civilian Conservation Corps
CRMP	Coordinated Resource Management Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
ERMA	Extensive Recreation Management Area
FLPMA	Federal Land Policy and Management Act
FMAP	Fire Management Activity Plan
FMP	Fire Management Plan
FMZ	Fire Management Zone
FUDS	Formerly Used Defense Site
GAPA	Ground to Air Pilotless Aircraft
HMP	Habitat Management Plan
IAA	Initial Attack Analysis
MEL	Most Efficient Level
MFP	Management Framework Plan
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NFMAS	National Fire Management Analysis System
NHS	National Historic Site
OHV	Off-Highway Vehicle
PFC	Properly Functioning Condition
PNC	Potential Natural Community
RMP	Resource Management Plan
SASEM	Simple Approach Smoke Estimation Model
SEAT	Single Engine Air Tanker(s)
SHPO	State Historic Preservation Office
SLD	Salt Lake District, BLM
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
T&E	Threatened and Endangered
TAD	Tooele Army Depot
UWC	Utah Wilderness Coalition
VRM	Visual Resource Management
VUD	Visitor Use Days
WHA	Wildlife Habitat Area
WSA	Wilderness Study Area

CHAPTER 1.0 PURPOSE AND NEED FOR PROPOSED ACTION

BLM lands administered by the Salt Lake District are located in eleven counties in northern Utah. Refer to General Location Map, Map 1.

1.1 Introduction

The severe fire season of 1994 resulted in a comprehensive review of the wildland fire program on the nation's lands. The joint study by the U.S. Departments of the Interior and Agriculture produced the 1995 report "Federal Wildland Fire Management Policy & Program Review." This report developed recommendations for planning, reintroduction of fire, and education. The goals are as follows:

Planning

To incorporate fire management goals and objectives, including the reintroduction of fire, into land management planning to restore and maintain sustainable ecosystems. Planning is a collaborative effort, with all interested partners working together to develop and implement management objectives that cross jurisdictional boundaries.

To clearly define fire management goals, objectives, and actions as developed and updated in comprehensive Fire Management Plans (FMP). The use of fire to sustain ecosystem health is based on sound scientific principles and information and is balanced with other societal goals, including public health and safety, air quality, and other specific environmental concerns.

Reintroduction of Fire

To restore wildland fire into the ecosystem to maintain healthy ecosystems, and minimize undesirable fire effects, based upon sound scientific information and land, resource and fire management objectives. Fire management practices are consistent for areas with similar management objectives, regardless of jurisdiction.

Education

To provide clear and consistent information to internal and external audiences about existing conditions, management goals and objectives, the role of fire in achieving these objectives, and alternatives and consequences of various fire management strategies. As a result, informed audiences would participate fully in the land and fire management planning processes.

Following are some of the key policy points from the 1995 Federal Wildland Fire Review:

•Protection of human life is reaffirmed as the first priority in wildland fire management.

•Wildland fire, as a critical and necessary natural process, must be reintroduced into the ecosystem.

•Land management agency administrators must have the ability to choose from the full spectrum of fire management actions, from prompt suppression to allowing fire to function in its natural ecological role.

•Where wildland fire cannot be safely reintroduced because of hazardous vegetation build-ups, some form of hazardous fuel reduction must be considered, particularly in wildland/urban interface areas.

•Structural fire protection in the wildland/urban interface is the responsibility of State, local and Tribal governments.

•Federal agencies must place more emphasis on education of the American people about how and why we use fire in natural resource management.

•No one entity can resolve and manage all the wildland fire issues; it must be a cooperative effort.

1.2 Need for Proposed Action

As a result of this report, the BLM Director has instructed all Field Offices to review their existing Fire Management Activity Plan (FMAP) and develop a Fire Management Plan (FMP) for all areas subject to wildland fires. Currently, fire management policy is based on the Salt Lake District's 1994 Fire Management Activity Plan (FMAP).

This plan amendment and new FMP will incorporate the study's recommendations regarding land management planning, reintroduction of fire into the ecosystem, and education by:

•using information about fire regimes, current conditions, and land management objectives as a basis to develop fire management goals and objectives

•revising or updating land management plans to include fuel treatments–prescribed fire, mechanical/chemical treatments

•exploring options within existing laws to allow for the use of fire to achieve goals of ecosystem health

•evaluating ecosystem condition by type and prioritize areas for the reintroduction of fire, and mechanical/chemical treatments to meet resource objectives and reduce hazards

•addressing the highest-priority needs in ecosystem assessment, monitoring, and management and determine the appropriate scope of fire use, consistent with historical fire regimes

•developing and implementing a strategic plan that educates the general public about the role of fire

1.3 Conformance with Land Use Plans

Upon review, it was determined that the new Federal Fire Management Policy is not in conformance with the following existing plans because they do not provide adequate guidance for fire management. Therefore, an amendment to the plans is proposed regarding fire management.

The Fire Management Plan would amend the following plans by reintroducing fire as a critical natural process into the ecosystem and by providing a comprehensive and consistent policy of how fires are handled for all public lands administered by the District:

1) Pony Express Resource Management Plan (1990);
2) Box Elder Resource Management Plan (1986);
3) Isolated Tract Planning Analysis (1985);
4) Park City Management Framework Plan (1982); and
5) Randolph Management Framework Plan (1980).

1.4 Planning Criteria

The following criteria have been established to guide the development of the amendment to the District's land use plans to incorporate the new Fire Management Plan:

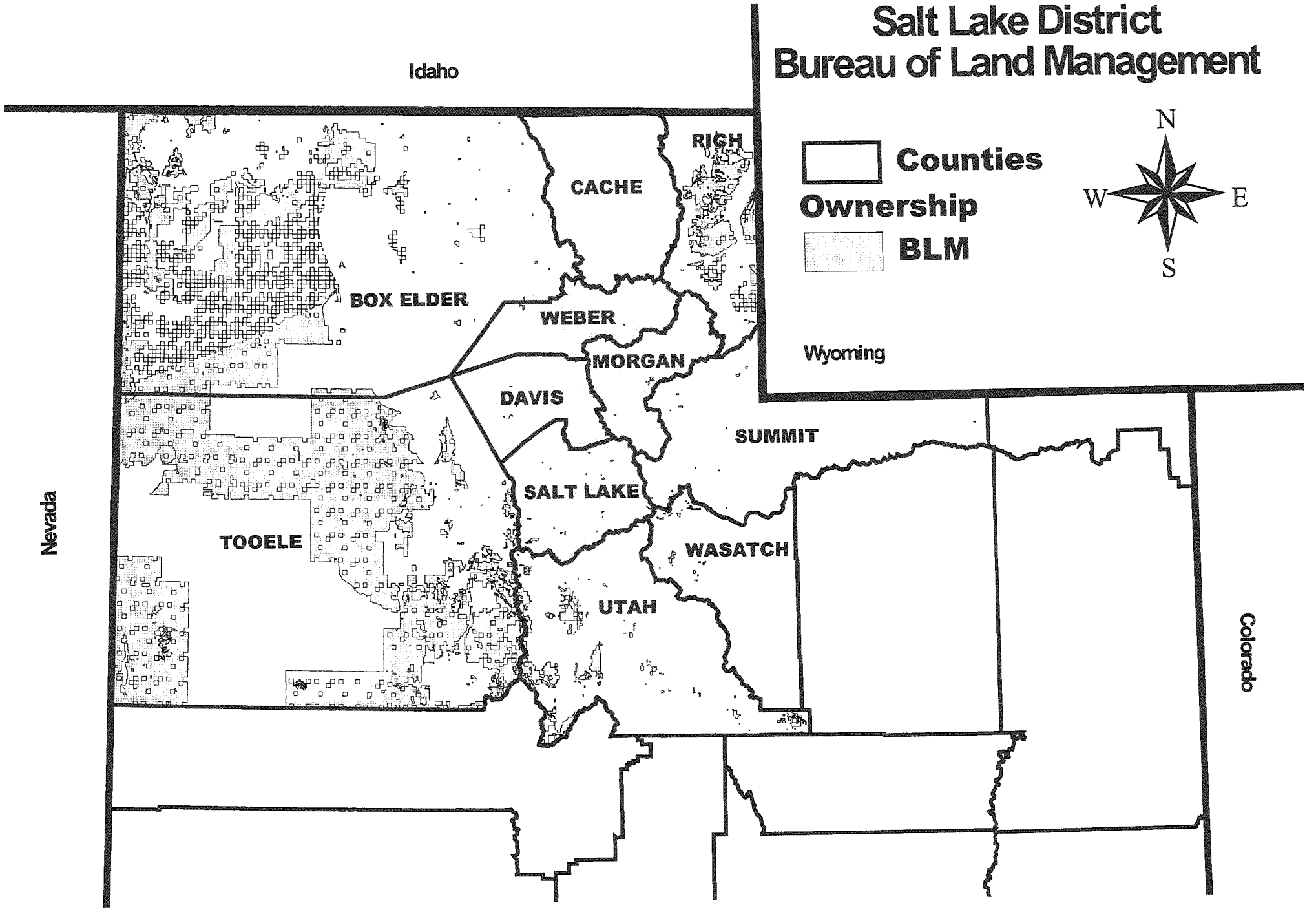
1) The Plan will address only BLM lands administered by the Salt Lake District and will not address private lands or lands administered by other government agencies.
2) The Plan will be developed following the guidance document: *Integrating Fire Into Resource Management: Phase One of the Fire Management Planning Process.* BLM Fire management Strategies Working Group. January 31, 1997.
3) The Plan will support land and resource management plans with a specific discussion of how prescribed fire and mechanical/chemical vegetation treatment will meet resource management objectives.
4) Coordination and cooperation across interagency administrative boundaries will take place in both planning and implementation.
5) Prescribed fires will comply with applicable Federal, State, and local laws and regulations for smoke management.
6) The public will have an opportunity to provide information and recommendations on the fire management issues and to review and comment on the proposed management before a final management decision.
7) This plan amendment is analyzed as a programmatic assessment. Subsequent NEPA documentation will be completed for site specific actions.

1.5 Plan Implementation and Monitoring

The proposed RMP/MFP amendment presented in this document would be implemented over a period of years. The ability of the Salt Lake District to complete related projects is directly dependent upon available funding. The priorities for accomplishment will be reviewed annually and may be revised based on changes in law, regulations, policy, or economic factors. A monitoring program will be developed to determine the effectiveness of the proposed decisions and the need for future modification.

1.6 Relationship to Other Plans, Programs, Policies, and Authorizing Actions

There are many site specific plans related to the RMPs, such as wildlife habitat management plans (HMPs), allotment management plans (AMPs), and Areas of Critical Environmental Concern (ACEC) management plans. These plans are built on the RMP and may need to be modified based on the final Fire Management Plan developed as a result of this Environmental Assessment (EA).


Salt Lake District
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Counties
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BOX ELDER
WEBER
MORGAN
DAVIS
SUMMIT
SALT LAKE
TOOELE
WASATCH
UTAH

Map 1

The District has participated on various multi-agency groups writing coordinated resource management plans (CRMP), including the Lucin-Pilot CRMP, Clover Creek Watershed CRMP and Goose Creek Multiple Use Management Plan. Neither CRMP is finalized, although a proposed plan has been written for Clover Creek.

A Memorandum of Understanding (MOU) exists between the State of Utah Air Quality Board, USDA Forest Service, and the USDI Bureau of Land Management. This MOU states that the involved parties mutually agree to comply with the Federal Clean Air Act, State Implementation Plan, and subsequent amendments to the Utah Clean Air Act Title 19 of the Utah Code as amended.

The BLM also has a Cooperative Agreement with the State of Utah and the U.S. Forest Service covering fire suppression on State, private, and Forest Service lands. This agreement is updated yearly through a local Annual Operating Plan which covers items such as initial attack responsibilities, cost sharing, and boundary line fires. In addition, BLM has the responsibility and financial liability to suppress fires that start on public land and also extends to State and private lands.

Our local Annual Operating Plan is a cooperative effort as mentioned above, and defines areas for suppression purposes based on a closest forces concept. Therefore, by agreement, the Salt Lake District Fire Program provides initial attack in Tooele County and full suppression to national forest lands in Tooele County and areas of Box Elder County west of the line from Kelton to the nearest point on the lake, and south of the Immigrant Trail/State Route 30 to Utah/Nevada state line. These areas include responsibilities on State and private lands. In exchange, the State, Counties, Upper Snake River District BLM, and Forest Service provide full suppression or initial attack on a portion of public lands in Rich, Box Elder, and Utah Counties.

As part of our agreement the Salt Lake District adheres to applicable State Laws that apply to State and private lands. Some of these laws are:

65A-8-4. Uncontrolled fire is a public nuisance.
Any fire on forest, range, or watershed land in the state burning uncontrolled and without proper and adequate action being taken to control or prevent its spread is a public nuisance.

65A-8-5. Fire control - County responsibilities.
(1) Counties shall abate the public nuisance caused by uncontrolled fire on privately owned or county owned forest, range, and watershed lands.
(3) The state forester shall make certain that appropriate action is taken to control wildland fires on nonfederal forest, range, and watershed lands.

65A-8-7. Responsibilities of county sheriffs and district fire wardens in controlling fires.
(1) . . . , the county sheriff shall take appropriate action to suppress uncontrolled fires on state or private lands.

Based on these suppression agreements and State Laws, it may be necessary for the BLM to take aggressive suppression action on 1) State and private lands adjacent to public lands; or 2) wildland fires that start on public lands and threaten State and private land.

1.7 Public Participation

•**Notice of Intent** - A Notice of Intent for this planning process was published in the Federal Register on October 7, 1997.

•**Scoping** - Five public scoping meetings were held to solicit input into issues to be addressed in the EA. These meetings were held during December, 1997 in Tooele, Salt Lake City, Brigham City, Randolph, and Park Valley. A total of 28 people attended these meetings, with 12 written comments received. A summary of the comments received are in Chapter 5.3. Notification of these meetings was by a November 18, 1997, letter to interested parties and a news release.

1.8 Scoping of Issues

The significance of scoping of issues is that it gave consideration to many concerns and helped to focus on the more important issues. Consequently, Chapter 2 describes the proposed alternatives that were formulated to address the issues listed below and are analyzed in this EA.

Issue 1: Safety

In the 1995 report "Federal Wildland Fire Management Policy & Program Review," safety to firefighters and the public was identified as a first priority. In addition to these two concerns, threats and risks to adjacent land owners from the spread of wildland fires and the inherent possibility of hazards from smoke were also identified as part of this safety issue.

Issue 2: Resource Management

Consideration for Rangeland Health encompasses a wide variety of sub-issues including; soil loss, water quality and yield, air quality, livestock grazing operations, woodland and vegetative products, developed and dispersed recreation, wilderness values (WSAs), historical and cultural values, wild horses, native vegetation and conversion to non-native vegetation, riparian, wildlife habitats, and Threatened, Endangered, and Utah BLM Sensitive Species. Other topics include fuel management with consideration for hazard reduction projects and creation of fuel breaks through natural and prescribed fires, or mechanical and/or chemical vegetation manipulation.

Issue 3: Costs

Fire economics includes several different types of costs, including 1) costs for natural fire suppression, 2) cost of completing a prescribed fire, and 3) the cost of rehabilitation following either a wildland fire or a prescribed fire. In addition, fire suppression must consider the net value of fire suppression, which is derived from the value of the land and resources minus the cost of fire suppression. A non-quantifiable cost is the "political cost," such as when smoke enters towns.

In addition to the above issues, fire education for the public needs to be increased regarding the role of fire in the ecosystem as well as the protection of rare, unique and scientific species.

Issues Considered but not Analyzed Further/Rationale

Visual Resource Values
All public land except for isolated tracts and the Park City MFP parcels, has been evaluated for placement into one of the Bureau's Visual Resource Management (VRM) Classes. Wildland fires, in the short-term, would temporarily depress the scenic quality of the area until the next growing season, but would not change the VRM Class rating. There are no designated scenic outlooks or view points that require specific fire tactics to protect the visual class rating.

Areas of Critical Environmental Concern (ACECs)
There are seven designated ACECs : Horseshoe Springs (A-3) and Bonneville Salt Flats (D-1) in Tooele County; Laketown Canyon (A-13) in Rich County; and Donner-Bettridge Creek (A-4), Transcontinental Railroad Grade (A-20), Blue Springs (B-13), and Salt Wells (B-13) in Box Elder County. Specific concerns and constraints have been identified for each ACEC and are listed in Appendix A. Selection of fire suppression tactics and strategies to be used would take into consideration the special characteristics of each site in order to protect those resources. Vegetation/fuel treatments would only be considered if there was no detriment to the resources.

Social and Economic
Because the geographic area of the Salt Lake District is so large and the economic activity along the Wasatch Front is so immense, it is foreseeable that fire operations would have little direct impact on social or economic parameters in the area as a whole. Only isolated populations and remote settlements may be beneficially or negatively affected by unsuppressed fires and rehabilitation efforts. The projected suppression costs under all alternatives total to less than $1 million and would occur mostly in Box Elder, Rich, and Tooele Counties. Even when these monetary inputs into the local economies are coupled with the costs of rehabilitation, it is unlikely to have a meaningful impact. Again, it is the traditional role that fire suppression and rehabilitation would have meaning to local communities up and down the Wasatch Front. Citizens in the area may consider this program to be a vital part of their ancestral heritage and derive a considerable amount of personal value from knowing that this program would continue.

Hazardous and Solid Waste Management
Tooele County has designated an area along the I-80 corridor as a Hazardous Waste Corridor. This designation covers an area from the southern border of Hill Air Force Range to Clive and to the foothills of the Cedar Mountains. There are two incinerators and two landfill businesses operating in this area. Landfills and incinerators have been landscaped to prevent wildland fires from jepardizing plant operatons.

The following mandatory items have been considered. Items that may be impacted have been discussed within the environmental assessment. Rationale for those elements that would not be adversely affected are listed below.

Value	Rationale
Flood plains	Resource not present
Prime/Unique Farmland	Resource not present
Paleontological Resources	Resource not present
Areas of Critical Environmental Concern	No adverse impact expected
Wilderness	Resource not present
Wild and Scenic Rivers	Resource not present
Native American Rights	Native American Rights not affected
Environmental Justice	No adverse impact expected

CHAPTER 2.0 PROPOSED ACTION AND ALTERNATIVES CONSIDERED FOR DETAILED ANALYSIS

Based on issues identified during the scoping process, BLM Salt Lake District proposed five alternatives (including the No Action alternative) which are discussed in Sections 2.3 through 2.7. This chapter defines the differences between the alternatives.

2.1 Fire Management Planning Areas (Polygon Descriptions)

In order to deal with the diversity of vegetation, the public lands were divided into four management categories, A, B, C, and D, that define the role and response that wildland fire has in a particular ecosystem. A brief definition of the categories follows:

- Category A – Where wildland fire is not desired;
- Category B – Where unplanned wildland fire will likely cause negative effects, but these effects may be mitigated through fuels management, prescribed fire, or other strategies;
- Category C – Where wildland fire is desired to manage ecosystems, but there are constraints because of the existing vegetation due to past fire exclusion;
- Category D – Where wildland fire is desired, and there are no constraints associated with resource conditions, social, economic, or political considerations.

These categories were then subdivided into numerical units called polygons (i.e. A-1, B-1, C-1, D-1, etc.), based on each area's unique resources, social, political, and geographic characteristics. The polygon descriptions, Appendix A, describe the current resources and are shown on Map 2. The goals and objectives for each polygon would be determined through this environmental assessment.

In the FMP, the polygon descriptions would be expanded to include the affected environment, goals and objectives for wildland fire suppression, prescribed fires and mechanical/chemical treatments to revitalize the natural vegetation and reduce hazardous fuels. The polygon descriptions would also describe how the resources could be impacted by wildland fire.

2.2 Analysis Assumptions/Target Acreage Derivation

SLD is characterized with a moderate level of fire occurrence. From January 1, 1987 through December 31, 1996, 615 wildfires were suppressed on BLM and other lands that the BLM protects under cooperative agreements or memorandums of understanding. These fires burned a total of 397,976.9 acres. A total of 423 fires, or approximately 69%, were caused by lightning. The remaining 192 fires, or 31%, were human-caused fires.

This represents an average annual fire occurrence of 61.5 fires per year with 39,797.7 acres burned. By removing the fires that occurred on non-BLM ownership and fires that are protected by other BLM districts or agencies, this average annual fire occurrence is reduced to 49.2 fires per year with 34,377 acres burned. These statistics are based on historical data derived from the Bureau's historical fire occurrence database. The data was further broken down into subunits by fuel/vegetation type. These subunits, representing areas of alike fire behavior, are known as Fire Management Zones (FMZs). FMZs are used within the Initial Attack Analysis (IAA) computer program when evaluating different levels of fire programs for cost-effectiveness versus ability to meet management objectives. For the SLD, three FMZs have been identified. FMZ 1 represents the annual grass with desert shrub fuel type. FMZ 2 represents the sagebrush/desert shrub with perennial grass fuel type. FMZ 3 represents the juniper/mountain shrub with perennial grass fuel type. For analysis purposes, the historical data was used as a base; the data was then expanded to derive acreage targets for the other alternatives. Appendix B shows the calculations to determine the target objective level and projected actual acres burned that were used for analysis in the Alternatives. Appendix B also contains a table showing the ten-year fire history by polygon for the SLD.

The importance of evaluating fire occurrence by fuel type relates to the variance in fire behavior that is exhibited by different fuels. Light fuels such as annual grass have much higher rates of spread than moderate fuels such as sagebrush and heavy fuels such as juniper. Under normal conditions, the higher rates of spread in lighter fuels could make these fires more difficult to suppress and contain than fires in heavier fuel types. This is evidenced when evaluating the effectiveness of the SLD fire suppression crews in meeting target suppression objectives as seen in Table 2.1.

Assuming an average suppression target to contain 90% of all fires at 300 acres or less, it is evident that these objectives were met 91% of the in FMZ 3, 87% in FMZ 2, and only partially met at 70% in FMZ 1. More importantly, all the fires that were contained at the objective of 300 acres or less account for only 2% of the total acreage

burned. Fires that exceed the 300 acre limit account for 98% of the total acres burned during the historical period. In addition, these same fires would account for a similar majority of the suppression costs, rehabilitation costs, and impacts to resources on the ground.

Table 2.1
1987-1996 Historical Fire Suppression Targets
vs
Actual Acres Burned

	Containment Size Limit	Annual Fire Frequency	Percent of Total	Annual Acres Burned	Percent of Total
FMZ 1	< 300 acres	12.2	70	375 acres	1.5
	300 + acres	5.3	30	23980 acres	98.5
	Totals	17.5	100	24355 acres	100
FMZ 2	< 300 acres	5.3	87	55 acres	3.5
	300 + acres	0.8	13	1531 acres	96.5
	Totals	6.1	100	1586 acres	100
FMZ 3	< 300 acres	23.2	91	268 acres	3.3
	300 + acres	2.4	9	7901 acres	96.7
	Totals	25.6	100	8169 acres	100
All FMZs	< 300 acres	40.7	82.7	698 acres	2
	300 + acres	8.5	17.3	33412 acres	98
	Totals	49.2	100	34110 acres	100

2.3 Alternative 1 – No Action Alternative/Continuation of Current Management

This alternative continues management strategies under the same philosophy of the existing approved 1994 Fire Management Activity Plan (FMAP).

Wildland Fire Suppression: Emphasis would be placed on a fire suppression strategy that strives to minimize overall fire management costs (Base budget + Suppression Cost + Net Value Change in resource values), while giving some consideration to resource management constraints, concerns, and objectives.

This alternative utilizes the suppression attack strategies of "Resource Suppression," "Natural Suppression," and "Full Suppression." Both "direct attack" and "indirect attack" suppression tactics could be used. The use of these suppression strategies would be based on decision criteria that may include designated Land Use Plan target acreage limits, resource values, values at risk, fire season severity, predicted weather and fire behavior, suppression costs, and other criteria specific to the fire site and time of occurrence. Refer to Tables 2.2a-c for a listing of suppression strategies, tactics, and techniques that would be used. Table 2.3 contains a listing by management polygon of the wildland fire target acreage figures.

Under normal circumstances, fire suppression emphasizes a "Full Suppression" strategy utilizing "direct attack" fire suppression tactics. However, if it would be determined that fire fighter or public safety or the need to minimize suppression cost warrants, a "Resource Suppression" or "Natural Suppression" strategy and/or "indirect attack" methods may be utilized. Fire suppression strives to minimize overall fire management costs (Base Budget + Suppression Costs + Net Value Change in resource values) as determined through the Initial Attack Analysis (IAA) computer modeling program utilized in the National Fire Management Analysis System (NFMAS). Based on the use of the IAA analysis it was determined in the 1994 SLD Fire Management Activity Plan (FMAP) that the Most Efficient Level (MEL) fire suppression organization should consist of four Type 4X Engines, three Type 6X Engines, one Type 2 Water Tender, and one Type 4 Air Tanker. Due to less than full funding at the MEL level, the "current" fire organization has consisted of all the aforementioned suppression resources excluding the Type 4 Air Tanker.

Initial attack suppression resources are dispatched based on criteria that includes: fire location, reported fire size, fuel type, reported fire behavior, current and forecasted weather conditions, availability of resources, and other factors. In addition to the suppression resources listed above," initial attack" resources may include use of local fire

cooperators including local county fire wardens, volunteer fire departments, and national resources such as the U.S. Forest Service's Type 1 Air Tanker based out of Ogden, Utah. Due to concerns over environmental impacts, mechanized equipment generally has not been utilized as an initial attack suppression resource . Exceptions to this has been situations when fires threatened, or had potential to threaten, life, property, or major resource values.

In the cheatgrass/desert shrub fuel type (FMZ 1), initial attack fire suppression generally involves "direct attack" by engines. Under extreme fire behavior situations, additional tactics may include use of Type 1 or 2 Air Tankers dropping aerial fire retardant or use of "indirect attack" methods such burnout or backfiring operations. Occasionally, during these severe burning conditions when life and property values are threatened, mechanical suppression resource such as dozers or grader/patrols have been utilized. Extended attack methods almost exclusively involve engines conducting mopup after control of the fire has been achieved.

Initial attack fire suppression in the sagebrush fuel type (FMZ 2) generally involves "direct attack" by fire engines with occasional use of Type 1 or 2 Air Tankers. Under extreme fire behavior situations, use of air tankers may be more frequent and use of "indirect attack" methods such as burn-out or backfiring operations may be necessary. Occasionally, mechanical equipment has been used to protect life and property during these severe conditions. Extended attack on these fuels are primarily related to engines conducting mopup after the fire has been controlled.

Initial attack in the juniper/mountain shrub fuel types (FMZ 3) predominantly involves engine crews serving as hand crews. These crews hike into fires and perform "direct attack" constructing handline. Use of Type 1 or 2 Air Tankers to drop aerial retardant may be frequent. During extreme burning conditions use of aerial retardant would be common. Fast moving fires generally require additional support from Type 1 or 2, 20-person hand crews. These severe fires often may also require "indirect attack" methods. Use of helicopters to support these crews would be common. Use of mechanized equipment has been primarily utilized to protect life and property. Extended attack generally involves hand crews or engine crews serving as hand crews performing mopup. Often helicopters may be utilized to support these hand crews.

Vegetation/Fuels Management: Limited application of resource management driven prescribed fires would occur. The use of vegetation manipulation, (e.g. prescribed fire and mechanical treatments) to reduce fuel hazards would be low. Fuels management activities to reduce fire severity and occurrence also would have limited application. Compared to other alternatives, the implementation of these management actions would be "Low." Refer to Table 2.2d for a listing of vegetation management techniques that would be used. Table 2.4 contains a listing by management polygon of the target acreage figures.

Fire Education: Fire education activities are outreach activities directed at educating the public about the role of fire in ecosystems, wildland fire behavior, and hazards and impacts associated with human-caused fires. Management activities may include school programs, public service announcements, news releases, signing, administrative policies, patrols, inspections, and enforcement.

Fire education activities would be primarily targeted at fire prevention. Using fire in a natural role in the ecosystem and the implementation of fuels management under the current management warrants a somewhat higher level of fire education than some of the other alternatives. In comparison to the other alternatives, fire education levels would be considered "Moderate." Refer to Table 2-2e for summary rating between the alternatives.

2.4 Alternative 2 – Proposed Action/ Integrated Fire/Resource Management Plan

This alternative emphasizes strategic fire management planning that integrates resource management goals, objectives, and concerns with fire management activities.

Wildland Fire Suppression: Key functions of this management philosophy are as follows:

1) Safely reintroduce fire into ecosystems to meet desired resource management objectives by utilizing the best science.

2) Use wildland fire control and suppression strategies and tactics that emphasize resource management objectives while minimizing total fire management costs.

3) Utilize a fire suppression strategy that balances resource management objectives and goals for protecting values at risk while minimizing fire management costs.

This alternative utilizes the suppression strategies of "Natural Suppression," "Resource Suppression," and "Full Suppression." The decision on whether wildland fires might be monitored, minimally suppressed, or aggressively attacked and the types of tactics used to suppress the fires would be based on decision criteria that would include resource management objectives, resource values, other values at risk, fire season severity, predicted weather and fire behavior, suppression costs, and other criteria specific to the fire site and time of occurrence. Both "direct

attack" and "indirect attack" suppression tactics would be used. Refer to Table 2.2a-c for a listing of strategy and suppression techniques that would be used. Table 2.3 contains a listing by management polygon of the target acreage figures.

Fire suppression emphasizes managing wildland fire in order to meet resource management objectives with the goal of safely reintroducing fire in ecosystems while minimizing costs and protecting values at risk. Fire suppression would still utilize a "Full Suppression" strategy in areas where fire would be not desired (polygons A and B) while the less aggressive "Resource Suppression" and "Natural Suppression" strategies may be utilized in the areas where fire would be desired or of no concern (polygons C and D).

Compared to Alternative 1, this alternative has more restrictive burned acreage targets in all fuel types, cheatgrass/desert shrub (FMZ 1), sagebrush (FMZ 2), and juniper/mountain shrub (FMZ 3). These more restrictive targets in FMZs 1 and 2 are expected due to the predominance of areas where fire would be not desired (polygons A and B). However, the more restrictive targets in FMZ 3, where most of the fuels are in areas where fire would be considered a benefit (polygons C) are not what one would expect when this alternative's goal would be to reintroduce fire into the ecosystems.

The reduction in burned acreage target in FMZ 3 would be true for several reasons. Historically, in FMZ 3 burn target objectives under Alternative 1 were met approximately 90 % of the time. These fires accounted for about 2-3% of the total acres burned in this FMZ. However, the approximate 10% of the fires that escaped initial attack account for about 97% of the burned acres under Alternative 1. Therefore, Alternative 1 resulted in numerous small fires and a few very large fires. The goal of the resource objectives, Alternative 2, would be to produce numerous moderate size fires with no large fires. As a result, the overall burned acreage target would be less than Alternative 1, but most fires would be allowed to burn to a larger acreage size while more actively burning fires would be attacked more aggressively to prevent them from becoming large fires.

Due to this more aggressive approach to fire suppression FMZs 1 and 2, and the need to more actively manage fires in FMZ 3, Alternative 2 would require a fire organization capable of greater fire line producing capabilities. Two methods exist for accomplishing this goal. One method would be to add additional equipment with similar fire line production rates to those that are currently employed. The second method would be to change to equipment that has higher line producing capabilities. The primary pieces of fire equipment that have greater fire line producing capabilities are mechanical equipment. Due to environmental concerns associated with this suppression resource, mechanized equipment would be not considered a viable fire suppression tool. Therefore the projected suppression organization would include five Type 4X Engines, three Type 6X Engines, two Type 2 Water Tenders, and one Type 4 Air Tanker. As in Alternative 1, cooperator's suppression resources would continue to be utilized.

For the cheatgrass/desert shrub fuel type (FMZ 1) and sagebrush fuel type (FMZ 2), suppression strategies, tactics, and initial attack and extended attack methods would be similar to Alternative 1. Suppression strategies and tactics in the juniper/mountain shrub types (FMZ 3) would be modified to allow a greater use of "Resource Suppression" and "Natural Suppression" strategies and/or "indirect attack" methods when appropriate to meet resource management objectives while protecting values at risk and minimizing costs. Use of burning operations to aid in managing fires in the juniper/mountain shrub type would be more likely. When extreme burning conditions, resource concerns, or values at risk warrant; a "Full Suppression" strategy with aggressive suppression would continue to be utilized in all fuel types.

Vegetation/Fuels Management: This alternative emphasizes greater use of vegetation management to meet resource management objectives and emphasizes the reintroduction of fire into ecosystems. The relative level of implementation of this management action would be considered "Moderate."

Vegetation management would include a wide variety of management activities including prescribed fire, mechanical manipulation, seeding to less flammable and more desirable species, fuelbreak establishment, and other strategies. These activities would be used to reduce fire severity and occurrence and reduce hazardous fuel accumulation. The relative level of fuels management would be "Moderate." Refer to Table 2.2d for a listing of vegetation management techniques that would be used. Table 2.4 contains a listing by management polygon of the target acreage figures.

Fire Education: Fire education would consist of the same elements as described in Alternative 1. However, the greater level of reintroduction of fire into ecosystems, along with traditional fire prevention concerns, would make fire education a "High" priority. Refer to Table 2-2e for summary rating between the alternatives.

2.5 Alternative 3 - Maximum Wildland Fire and Vegetation/Fuels Management

The goal in this alternative would be to maximize wildland fire and vegetation management in the ecosystem to reduce the number of large, damaging wildfires.

Wildland Fire Suppression: Emphasis would be placed on a fire suppression strategy that would utilize "Resource Suppression" or "Natural Suppression" in the specific polygons identified where fire would benefit the ecosystem.

For the specific polygons identified where fire would NOT benefit the ecosystem, the suppression strategy for wildland fires would be "Full Suppression" to prevent damage to the ecosystem. "Direct attack" suppression tactics would be emphasized, but "indirect attack" methods may be used as well. Refer to Tables 2.2a-c for a listing of strategy and suppression techniques that would be used. Table 2.3 contains a listing by management polygon of the target acreage figures.

Fire suppression emphasizes managing wildland fire to reduce long-term fuel loadings and therefore risks of large, damaging fires. Fire suppression would still utilize a "Full Suppression" strategy in areas where fire would be not desired (polygons A and B) while the less aggressive "Resource Suppression" and "Natural Suppression" strategies may be utilized in the areas where fire would be desired or of no concern (polygons C and D).

Compared to Alternatives 1 and 2, this alternative has more restrictive burned acreage targets in cheatgrass/desert shrub fuel type (FMZ 1). This fuel type would be primarily represented as areas where fire would be not desired (polygon A). The burned acreage target for the sagebrush fuel type (FMZ 2) would be very similar to Alternative 1. Burned acreage targets for the juniper/mountain shrub fuel type (FMZ 3) are more restrictive than Alternative 1, but less restrictive than Alternative 2. Like Alternative 2, the goal of this alternative in FMZ 3 would be to redistribute the fire load from numerous small fires and a few large fires to numerous moderate sized fires. Therefore, like Alternative 2, most small fires would be allowed to burn to a larger acreage size while more actively burning fires would be attacked more aggressively to prevent them from becoming large fires. The difference between Alternative 2 and this alternative would be that the individual fire size target under Alternative 3 would on average be slightly larger thus leading to greater overall acreage burned in the FMZ 3 fuel type.

Due to the more aggressive approach to fire suppression in FMZ 1 and the need to more actively manage fires in FMZ 3, the initial attack fire organization would increase somewhat from Alternative 2. Similar to Alternatives 1 and 2, environmental concerns associated with use of mechanical suppression resources do not make use of this equipment a viable fire suppression tool. Therefore, the projected suppression organization would include six Type 4X Engines, three Type 6X Engines, two Type 2 Water Tenders, and one Type 4 Air Tanker. As in Alternatives 1 and 2, cooperator's suppression resources would continue to be utilized.

For the cheatgrass/desert shrub fuel type (FMZ 1) and sagebrush fuel type (FMZ 2), suppression strategies, tactics, and initial attack and extended attack methods would be similar to alternatives 1 and 2. Although initial response and tactics in FMZ 1 would be more aggressive and may include more use of Type 1 or 2 Air Tankers dropping aerial retardant. Suppression strategies and tactics in the juniper/mountain shrub types (FMZ 3) would be modified, similar to Alternative 2, to allow a greater use of "Resource Suppression" and "Natural Suppression" strategies and/or "indirect attack" methods when appropriate to meet resource management objectives while protecting values at risk and minimizing costs. Use of burning operations to aid in managing fires in the juniper/mountain shrub type would be more likely. When extreme burning conditions, resource concerns, or values at risk warrant; a "Full Suppression" strategy with aggressive suppression would continue to be utilized in all fuel types.

Vegetation/Fuels Management: This alternative would utilize all vegetation management techniques, such as wildland fire, prescribed fire, mechanical, and chemical treatments to meet management objectives. The desire to minimize wildland fire size and occurrence puts fuels management at a high priority and a "High" level of implementation would occur . Refer to Table 2.2d for a listing of vegetation management techniques that would be used. Table 2.4 contains a listing by management polygon of the target acreage figures.

Fire Education: Fire education would consist of the same elements as described in Alternative 1. However, the greater level of reintroduction of fire into ecosystems, along with traditional fire prevention concerns, would make fire education a "High" priority. Refer to Table 2-2e for summary rating between the alternatives.

2.6 Alternative 4 – Minimum Wildland Fire Control and Vegetation/Fuels Management

This alternative would allow wildland fires to take a natural course in the ecosystem. Little action would be taken to reduce the size or frequency of fires.

Wildland Fire Suppression: A "Natural Suppression" fire suppression strategy would be used. Little to no regard would be given to resource values, resource management objectives, or other values at risk. Generally, all fires would be considered a natural part of the ecosystem, and would be allowed to burn, regardless of positive or negative impacts.

On-the-ground suppression tactics could include "direct attack" or "indirect attack" suppression tactics, but most often fires would be monitored and allowed to burn. Refer to Tables 2.2a-c for a listing of strategy and suppression techniques that would be used. Table 2.3 contains a listing by management polygon of the target acreage figures.

Fire suppression would be very limited. The goal of this alternative would be to allow all fires to take a natural course and little effort would be made to reduce the size or frequency. The primary fire suppression strategy in all areas would be "Resource Suppression" or "Natural Suppression." Only in areas where fires presented an imminent threat to life or property would a "Full Suppression" strategy be utilized. No regard would be given to resource concerns or the potential negative or positive impacts resulting from the occurrence of fire.

Burned acreage targets in all FMZs of this alternative would be at least three times the acres identified in Alternative 1. Fire suppression tactics would consist primarily of monitoring fires or utilizing least cost tactics such as "indirect attack" methods such as burnout or backfiring operations. Required initial attack forces would be minimal. The projected initial attack fire organization would consist of two Type 4X Engines, one Type 6X Engine, and one Type 2 Water Tender.

Vegetation/Fuels Management: Little to no vegetation management would be performed and the level of this management action would be considered "Low." Refer to Table 2.2d for a listing of vegetation management techniques that would be used.

Fire Education: Fire prevention would be not a great concern and fire would not likely be used to meet specific resource management objectives; therefore fire education would have a minor role and education activities would be considered "Low." Refer to Table 2-2e for summary rating between the alternatives.

2.7 Alternative 5 – Aggressive Fire Control

This alternative addresses the use of wildland fire control and suppression strategies and tactics that emphasize minimizing acres burned with little to no regard given to resource management objectives, resource constraints, or suppression costs.

Wildland Fire Suppression: This alternative stresses a "Full Suppression" strategy. "Direct attack" suppression tactics would be emphasized. The most effective suppression tactics would be utilized without regard for cost or resource objectives and constraints. Refer to Tables 2.2a-c for a listing of strategy and suppression techniques that would be used. Table 2.3 contains a listing by management polygon of the target acreage figures.

Fire suppression would emphasize aggressive suppression and minimizing acres burned regardless of resource objectives, resource constraints, and suppression costs. The primary strategy in all fuel types would be "Full Suppression" with "direct attack" methods. However, should fire fighter or public safety warrant, other strategies or "indirect attack" methods might be utilized.

Due to the more aggressive approach to be applied in all FMZs, the initial attack fire organization would require greater fire line constructing capabilities than identified under all other alternatives. Since environmental concerns are not a limiting factor, mechanized equipment would be a viable option and would provide the greatest production rate increase at the least cost. Therefore, the projected initial attack fire organization would include two Type 2 Dozers, six Type 4X Engines, three Type 4X Engines, two Type 2 Water Tenders, and one Type 4 Air Tanker. As in Alternative 1, cooperator's suppression resources would continue to be utilized.

Initial attack fire suppression strategies and tactics would be similar to Alternative 1, but the increased aggressiveness would lead to more frequent use of Type 1 and 2 Air Tankers and the use of dozers to construct fire line in all the fuel types. In addition, the extended attack in FMZ 3 would likely see a greater use of helicopters.

Vegetation/Fuels Management: No vegetation management would be performed and the level of this management action would be considered "Low." Refer to Table 2.2d for a listing of vegetation management techniques that would be used.

Fire Education: Fire education activities would be primarily targeted at fire prevention. The level of fire education activities would be considered "Moderate." Refer to Table 2-2e for summary rating between the alternatives.

2.8 Features Common to All Alternatives

The "Full Suppression" strategy would be used in all polygons to protect areas where there are immediate and eminent threats to life, major property values, critical resource values, and areas where wildland fire would be not considered a benefit.

During multiple fire situations with very high to extreme fire danger rating and multiple geographic areas, management response to wildland fires could change to the "Full Suppression" strategy. Prescribed fires would require approval from the area command.

2.9 Standard Operating Procedures

The following procedures would be utilized regardless of the alternative selected.

Wildland Fire Suppression
The use of dozers to construct fire line will not occur on public land under BLM administration unless there is threat to life or private property unless deemed necessary by the Agency Administrator. Should dozer use be required, the bladed material will be replaced and shaped to the original contour of the land within ten days after the fire is declared out.

No foaming agents will be used in livestock or wildlife troughs or ponds.

Vegetation/Fuel Management
Site specific planning for prescribed fires and other vegetation/fuel treatments in VRM Class II areas would include completion of BLM Form 8400-4, Contrast Rating Form, to insure that the objectives of Class II are met.

All vegetation treatment projects will be reviewed to determine the need for a cultural resource inventory. If an inventory is necessary, it will either be conducted by BLM cultural resource staff or completed under contract with a qualified archaeological consultant.

Generally, projects less than 1,000 acres would be completed by BLM staff cultural resource personnel. Projects over 1,000 acres or multiple projects totaling more than 1,000 acres would require a contract or additional cultural resource personnel.

If sites are located, they will be marked for avoidance. Sites that could not be avoided will be evaluated for listing on the National Register. Eligible sites that could not be avoided, would be mitigated. As part of the project specific environmental process, the District archaeologist would ensure that the Section 106 process is complete prior to any ground disturbing activity.

Native American groups will be notified prior to any vegetation/fuel management projects. Their concerns will be taken into account in the overall design of individual projects. Identified areas of cultural concern will be excluded from the project by avoidance and/or buffering. If cultural sites can not be practically avoided, BLM will work with affected parties to design culturally sensitive and appropriate mitigation strategies. This may include eliminating those locations from the project.

Prescribed fires and mechanical/chemical treatments in desert shrub and semi-desert shrub communities will generally be limited to black stripping, as a hazardous fuel reduction method, or as site preparation for green stripping projects in the following polygons: A-1 through A-21, C-6, C-7, D-1, and D-2. General application of prescribed fire will only be allowed in the upland, mountain, and wetland areas of the following polygons: B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8, B-9, B-10, B-11, B-12, B-13, C-1, C-2, C-3, C-4, C-5, and C-8.

Prescribed fires and mechanical/chemical treatments will be located in areas where the treatments will reduce the threat of large uncontrolled fires, create small mosaics of impacted area to increase the "edge effect" and improve wildlife and plant diversity, and be spaced at proper distances so as to not cause impacts to local wildlife.

Prescribed fires, and mechanical/chemical treatments, will be conducted at seasons of the year when impacts to wildlife will be minimized. Treatments will normally not occur during the period of March through July where conflicts with nesting raptors and passerine birds exist. Where treatments are proposed in crucial big game and upland game habitats, the treatments will be timed and designed to minimize impacts to these species during these crucial time periods.

Mechanical treatments will not be allowed in WSA's or lands where wilderness characteristics may need to be protected because of potential for future designation. Rehabilitation of these areas will be limited to the use of native plant species. Cross-country vehicle travel will not be allowed in these same areas if such travel may impact wilderness values.

During the initial planning for vegetation/fuel treatments, a review will be made to identify potential habitat for listed sensitive species. Any potential habitat will be surveyed to determine if plants or wildlife are present, and would be adversely impacted by the treatment. If mitigation is not possible, the treatment area should be revised to avoid the plants.

Applicable to All Actions
When reseeding is determined to be necessary, areas impacted by natural or prescribed fires, as well as mechanical and chemical treatments, will generally be reseeded using a diverse seed mix with emphasis on native species, and the seeding will occur the fall following the particular treatment or fire. The technique of two-way chaining and seeding will be the usual treatment to remove portions of juniper skeletons and decadent brush, prepare the seed bed, and then cover the seeds to improve germination and seeding success.

During rehabilitation, some areas in polygons B and C would need fences and controls (herding, closing allotment, move to another allotment, feeding in a corral) to restrict livestock from the burned areas. Fences could continue to be used in the long-term to control livestock.

Cumulative impacts from natural fires, habitat conversion, or treatments on BLM, and adjacent State and private lands, will be considered prior to any treatment being implemented.

Rehabilitation of disturbed sites, fire, chaining, dozing, etc., will use the best methodologies available which will increase rehabilitation success and minimize impacts to sensitive resources.

Rehabilitation projects following vegetation treatments, prescribed fires, or wildland fires will utilize species that would establish the desired plant community, stabilize soils, reduce risk of a severe erosion event, and enhance soil productivity.

Riparian/wetland areas are to be enhanced at every opportunity. Priority will be given to rehabilitate areas at risk of degradation due to erosion (i.e., head cutting, rills, or sloughing). All prescribed fire or vegetation management projects will be in compliance with NEPA and will analyze specific local conditions. The intention is to restore the riparian/wetland zone to PFC and insure long-term quality habitat.

Range/ecological site descriptions will be used to return the riparian area to PFC considering natural regeneration, cost effectiveness and seed/material availability.

No surface activity (i.e., blading or vehicle travel) will be allowed within 100 meters of a riparian or wetland zone unless it could be shown that it will improve the habitat or there is no other practical alternative (threat to life or property during suppression actions). Special circumstances will be approved by the Agency Administrator.

Protection of the BLM's monetary investment in riparian structures (i.e., exclosures and signing) will be incorporated into the Emergency Fire Plan or Prescribed Fire Plan.

Native plants will be selected/considered for rehabilitation first. Introduced species used in the reseeding/ rehabilitation efforts will be used according to developed policy. Introduced species may be included if they assist in short-term soil stabilization and do not out-compete native species in the longer term. Other land use activities will be restricted one to two years for habitat recovery purposes.

After a wildland fire, livestock grazing would not be allowed on burned areas for a minimum of one growing season. It is anticipated that livestock will be restricted from the rehabilitated area for two years. However, it is recognized that there may be some circumstances which may require a longer period of rest. Examples of such circumstances include drought and poor establishment of the seeded area.

TABLES 2.2a-c
COMPARISON OF STRATEGIES, TACTICS AND TECHNIQUES

TABLE 2.2a
WILDLAND FIRE SUPPRESSION STRATEGIES

Wildland Fire Suppression Strategy	Alternative 1 No Action	Alternative 2 Integrated	Alternative 3 Maximum	Alternative 4 Minimum	Alternative 5 Aggressive
Full Suppression					
Mountain	Mod.	Low	Low	Low	High
Upland	Mod.	Mod.	Mod.	Low	High
Semi-desert	High	High	High	Low	High
Desert	High	High	High	Low	High
Resource Suppression					
Mountain	Mod.	Mod.	Mod.	Low	Low
Upland	Mod.	Mod.	High	Low	Low
Semi-desert	Low	Low	Mod.	Low	Low
Desert	Low	Low	Low	Low	Low
Natural Suppression					
Mountain	Low	Mod.	High	High	Low
Upland	Low	Mod.	High	High	Low
Semi-desert	Low	Low	Mod.	High	Low
Desert	Low	Low	Low	High	Low

NOTE: In situations that threaten life and/or property, the "Full Suppression" strategy will be used under all alternatives.

TABLE 2.2b
WILDLAND FIRE SUPPRESSION TACTICS

Wildland Fire Suppression Tactic	Alternative 1 No Action	Alternative 2 Integrated	Alternative 3 Maximum	Alternative 4 Minimum	Alternative 5 Aggressive
Direct Attack					
Mountain	Mod.	Low	Low	Low	High
Upland	High	Mod.	Mod.	Low	High
Semi-desert	High	High	High	Low	High
Desert	High	High	High	Low	High
Indirect Attack					
Mountain	Mod.	Mod.	High	High	Low
Upland	Mod.	Mod.	High	High	Low
Semi-desert	Low	Low	High	High	Low
Desert	Low	Low	High	High	Low

NOTE: In situations that threaten life and/or property, the "Full Suppression" strategy will be used under all alternatives.

TABLE 2.2c
WILDLAND FIRE SUPPRESSION TECHNIQUES

Wildland Fire Suppression Techniques	Alternative 1 No Action	Alternative 2 Integrated	Alternative 3 Maximum	Alternative 4 Minimum	Alternative 5 Aggressive
Air Attack					
Heavy Tanker	Ordinarily	Ordinarily	Ordinarily	Limited	Frequently
SEAT	Frequently	Frequently	Frequently	Limited	Frequently
Heli w/bucket drops	Ordinarily	Ordinarily	Ordinarily	Limited	Frequently
Smoke Jumpers	Limited	Limited	Ordinarily	Limited	Ordinarily
Heli-rappelers	Limited	Limited	Ordinarily	Limited	Ordinarily
Engines	Frequently	Frequently	Frequently	Ordinarily	Frequently
Back Burning	Ordinarily	Ordinarily	Frequently	Frequently	Ordinarily
Hand Crews	Frequently	Frequently	Frequently	Ordinarily	Frequently
Dozer/Grader/ Patrol	Limited	Limited	Limited	Limited	Frequently
Explosives	Limited	Limited	Limited	Limited	Limited

NOTE: In situations that threaten life and/or property, the "Full Suppression" strategy will be used under all alternatives.

TABLE 2.2d
VEGETATION/FUEL MANAGEMENT

Vegetation/Fuel Management	Alternative 1 No Action	Alternative 2 Integrated	Alternative 3 Maximum	Alternative 4 Minimum	Alternative 5 Aggressive
Prescribed fire	Low	Mod.	High	N/A	N/A
Chaining 1-way/2-way	Low	Mod.	High	Low	N/A
Chemical	Low	Mod.	High	Low	N/A
Roller Chopping	Low	Mod.	High	Low	N/A
Plow	Low	Mod.	High	Low	N/A
Seeding aerial, broadcast dribbled, drilled	Low	Mod.	High	Low	N/A
Thinning	Low	Mod.	High	Low	N/A
Black stripping	Low	Mod.	High	Low	N/A
Green stripping	Low	Mod.	High	Low	N/A
Reseeding aerial, broadcast dribbled, drilled	Low	Mod.	High	Low	N/A
Direct Seedling Planting	Low	Mod.	High	Low	N/A
Project Maintenance	Low	Mod.	High	Low	N/A
Livestock Management	Low	Mod.	High	N/A	N/A
Other - Best Science as developed	Low	Mod.	High	N/A	N/A

TABLE 2.2e
FIRE EDUCATION

Fire Outreach	Alternative 1 No Action	Alternative 2 Integrated	Alternative 3 Maximum	Alternative 4 Minimum	Alternative 5 Aggressive
Education	Mod.	High	High	Low	Mod.

TABLE 2.3

WILDLAND FIRE SUPPRESSION ACREAGE TARGETS BY POLYGON

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0. In 10-yr column, top figure is target, bottom is projected.

WILDLAND FIRE SUPPRESSION		Alternative 1 No Action			Alternative 2 Integrated			Alternative 3 Maximum			Alternative 4 Minimum			Alternative 5 Aggressive		
Target level Projected Actual		7,000-9,650 28,250-38,850			3,750-5,150 19,100-26,250			4,000-5,500 16,200-22,250			24,300-33,400 93,590-128,700			1,240-1,700 6,400-8,800		
Unit	FMZ	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr
A-1	1	100	200	300	100	200	300	100	200	300	300	600	900	50	100	150
				0			4,551			4,551			13,653			2276
A-2	2	100	200	300	100	300	500	200	500	800	300	600	900	50	100	150
				1000			1015			1,624			1,827			305
A-3	1	300	8,000	14,850	300	7,000	10,000	300	5,000	7,000	1,000	25,000	44,550	150	2,500	3,500
				225,323			151,700			106,190			675,824			53,095
A-4	3	200	200	200	100	300	500	100	300	500	200	400	600	100	100	100
				0			710			710			852			142
A-5	2	100	100	100	100	100	100	100	100	100	100	200	300	50	50	50
				.1			203			203			609			102
A-6	2	Full Suppression			Full Suppression			Full Suppression			100	200	300	Full Suppression		
				0									609			
A-7	2	100	100	100	100	100	100	100	100	100	100	200	300	50	50	50
				0			203			203			609			102
A-8	3	200	200	200	100	300	500	100	300	500	300	900	1,500	100	100	100
				85			710			710			2,130			142
A-9	2	Full Suppression			100	300	500	Full Suppression			100	200	300	Full Suppression		
				553.2			1,015						609			
A-10	3	200	200	200	100	300	500	100	300	500	300	900	1,500	100	100	100
				8.1			710			710			2,130			142

TABLE 2.3

WILDLAND FIRE SUPPRESSION ACREAGE TARGETS BY POLYGON

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0. In 10-yr column, top figure is target, bottom is projected.

WILDLAND FIRE SUPPRESSION		Alternative 1 No Action			Alternative 2 Integrated			Alternative 3 Maximum			Alternative 4 Minimum			Alternative 5 Aggressive		
Target level Projected Actual		7,000-9,650 28,250-38,850			3,750-5,150 19,100-26,250			4,000-5,500 16,200-22,250			24,300-33,400 93,590-128,700			1,240-1,700 6,400-8,800		
Unit	FMZ	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr
A-11	3	200	200	200	200	200	200	200	200	200	200	400	600	100	100	100
				3.1			284			284			852			142
A-12	2	300	2,500	4,000	300	1,000	1,500	300	1,000	1,500	900	7,500	12,000	150	500	750
				10,377			3,045			3,045			24,360			1,523
A-13	2	Full Suppression			100	300	500	100	300	500	100	200	300	Full Suppression		
				0			1,015			1,015			609			
A-14	3	200	1,000	1,600	200	600	1,000	200	600	1,000	600	3,000	4,800	100	300	500
				2,500.1			1,420			1,420			6,816			710
A-15	1	300	500	750	300	500	750	300	500	750	900	1,500	2,250	150	500	350
				11,270.5			11,378			11,378			34,133			5,310
A-16	3	200	9,000	15,000	1,000	1,500	2,500	1,000	1,500	2,500	600	27,000	45,000	100	750	1,250
				22,838.1			3,550			3,550			63,900			1,775
A-17	2	300	2,500	4,000	300	1,000	1,500	300	1,000	1,500	900	7,500	12,000	150	500	750
				10,065.5			3,045			3,045			24,360			1,523
A-18	2	300	300	300	Full Suppression			Full Suppression			300	600	900	150	150	150
				500									1,827			305
A-19	1	Full Suppression			Full Suppression			Full Suppression			100	200	300	Full Suppression		
				0									4,551			
A-20	1	Full Suppression			Full Suppression			Full Suppression			100	200	300	Full Suppression		
				0									4,551			

TABLE 2.3

WILDLAND FIRE SUPPRESSION ACREAGE TARGETS BY POLYGON

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0. In 10-yr column, top figure is target, bottom is projected.

WILDLAND FIRE SUPPRESSION		Alternative 1 No Action			Alternative 2 Integrated			Alternative 3 Maximum			Alternative 4 Minimum			Alternative 5 Aggressive		
Target level Projected Actual		7,000-9,650 28,250-38,850			3,750-5,150 19,100-26,250			4,000-5,500 16,200-22,250			24,300-33,400 93,590-128,700			1,240-1,700 6,400-8,800		
Unit	FMZ	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr
A-21	2	Full Suppression		8	Full Suppression			Full Suppression			100	200	300 609	Full Suppression		
B-1	2	300	300	300 540.2	300	500	1,000 2,030	300	500	1,000 2,030	900	1,500	3,000 6,090	150	150	150 305
B-2	3	100	100	100 0	300	1,000	1,500 2,130	100	100	100 142	900	3,000	4,500 6,390	50	50	50 71
B-3	3	200	300	400 35.6	400	1,000	1,500 2,130	400	1,000	1,500 2,130	1,200	3,000	4,500 6,390	100	150	200 284
B-4	3	300	1,000	1,750 2,637.8	600	3,000	4,000 5,680	600	3,000	4,000 5,680	1,800	9,000	12,000 17,040	150	500	850 1,207
B-5 Upland	2	300	300	300 0	500	500	500	500	500	500 1,015	500	1,000	1,500 3,045			150 305
B-5 Des. & Semi-Des.	2	100	100	100 0	100	100	100	100	100	100 203	100	200	300 609			50 102
B-6	2	300	2,000	3,000 7946.8	300	600	900 1,827	300	1,000	1,500 3,045	900	6,000	9,000 18,270	150	300	450 914
B-7	3	200	4,000	7,000 10,576.5	300	1,000	1,500 2,130	500	2,000	3,000 4,260	600	12,000	21,000 29,820	100	500	750 1,065
B-8	2	200	200	200 765.2	300	750	1,500 3,045	300	750	1,500 3,045	900	2,250	4,500 9,135	100	100	100 203

TABLE 2.3
WILDLAND FIRE SUPPRESSION ACREAGE TARGETS BY POLYGON

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0. In 10-yr column, top figure is target, bottom is projected.

WILDLAND FIRE SUPPRESSION		Alternative 1 No Action			Alternative 2 Integrated			Alternative 3 Maximum			Alternative 4 Minimum			Alternative 5 Aggressive		
Target level Projected Actual		7,000-9,650 28,250-38,850			3,750-5,150 19,100-26,250			4,000-5,500 16,200-22,250			24,300-33,400 93,590-128,700			1,240-1,700 6,400-8,800		
Unit	FMZ	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr
B-9	2	300	300	300	500	1,000	1,500	500	1,000	1,500	1,500	3,000	4,500	150	150	150
				0			3,045			3,045			9,135			305
B-10	2	300	300	300	100	500	700	100	500	700	300	1,500	2,100	150	150	150
				102.1			1,421			1,421			4,263			305
B-11	2	300	300	300	200	600	1,000	200	600	1,000	600	1,800	3,000	150	150	150
				655			2,030			2,030			6,090			305
B-12	3	Full Suppression			Full Suppression			Full Suppression			100	200	300	Full Suppression		
													426			
B-13	2	100	150	200	Full Suppression			Full Suppression			200	400	600	50	150	100
				510.8									1,218			203
C-1	3	200	1,500	2,500	> 60 < 300	800	1,200	500	1,500	2,500	600	4,500	7,500	100	400	600
				3,833.4			1,704			3,550			10,650			852
C-2	3	200	1,000	1,500	>100 <500	800	1,200	500	1,200	2,000	1,500	3,600	6,000	100	400	600
				2,274			1,704			2,840			8,520			852
C-3	3	200	8,000	11,500	>100 <500	1,500	2,000	500	2,000	3,000	600	24,000	34,500	100	750	1,000
				17,067			2,840			4,260			48,990			1,420
C-4	3	200	2,200	3,600	> 60 <300	1,000	1,500	500	2,500	4,000	600	6,600	10,800	100	500	750
				5,459.7			2,130			5,680			15,336			1,065
C-5	3	200	8,000	12,000	>100 <500	1,500	2,000	500	1,500	2,000	600	24,000	36,000	100	750	1,000
				18,329.2			2,840			2,840			51,120			1,420

TABLE 2.3

WILDLAND FIRE SUPPRESSION ACREAGE TARGETS BY POLYGON

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0. In 10-yr column, top figure is target, bottom is projected.

WILDLAND FIRE SUPPRESSION		Alternative 1 No Action			Alternative 2 Integrated			Alternative 3 Maximum			Alternative 4 Minimum			Alternative 5 Aggressive		
Target level Projected Actual		7,000-9,650 28,250-38,850			3,750-5,150 19,100-26,250			4,000-5,500 16,200-22,250			24,300-33,400 93,590-128,700			1,240-1,700 6,400-8,800		
Unit	FMZ	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr	Fire Target	5-yr	10-yr
C-6	2	300	300	300	300	600	900	300	600	900	900	1,800	2,700	150	150	150
				.1			1,827			1,827			5,481			305
C-7	1	100	100	100	300	600	900	300	600	900	900	1,800	2,700	50	50	50
				40			13,653			13,653			40,959			759
C-8	2	100	100	100	>100 <500	800	1,200	500	800	1,200	1,500	2,400	3,600	50	50	50
				0			2,436			2,436			7,308			102
D-1	2	No Targets			No Targets			No Targets			No Targets			No Targets		
				273												
D-2	2	No Targets			No Targets			No Targets			No Targets			No Targets		
				0												

TABLE 2.4

VEGETATION/FUEL MANAGEMENT TREATMENT ACREAGE TARGETS BY POLYGONS

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0.

Vegetation Treatment		Alternative 1 No Action					Alternative 2 Integrated					Alternative 3 Maximum				
Target level		900-1,500/year					2,700-4,500/year					4,950-8,300/year				
Unit	FMZ	Percent Treated	Single Treatment	1-yr	5-yr	10-yr	Percent Treated	Single Treatment	1-yr	5-yr	10-yr	Percent Treated	Single Treatment	1-yr	5-yr	10-yr
A-1	1	No target					No target					100%	200	200	400	400
A-2	2	No target					No target					No target				
A-3	1	100%	1,000	2,000	6,000	9,000	100 %	2,000	2,000	7,000	13,000	100%	2,000	5,000	12,000	20,000
A-4	3	No target					No target					No target				
A-5	2	No target					No target					No target				
A-6	2	No target					No target					No target				
A-7	2	No target					No target					No target				
A-8	3	No target					No target					No target				
A-9	2	No target					No target					40%	200	600	1,500	2,000
A-10	3	No target					No target					No target				
A-11	3	No target					100%		200	200	400	100%	200	200	200	400
A-12	2	No target					No target					No target				
A-13	2	No target					No target					No target				
A-14	3	No target					100%		200	200	400	100%	400	400	600	800
A-15	1	No target					No target					100%	200	200	400	500
A-16	3	No target					No target					100%	200	200	400	500
A-17	2	No target					No target					40%	200	200	600	1,000
A-18	2	No target					No target					No target				
A-19	1	No target					No target					No target				
A-20	1	No target					No target					No target				

TABLE 2.4
VEGETATION/FUEL MANAGEMENT TREATMENT ACREAGE TARGETS BY POLYGONS

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0.

Vegetation Treatment		Alternative 1 No Action					Alternative 2 Integrated					Alternative 3 Maximum				
Target level		900-1,500/year					2,700-4,500/year					4,950-8,300/year				
Unit	FMZ	Percent Treated	Single Treatment	1-yr	5-yr	10-yr	Percent Treated	Single Treatment	1-yr	5-yr	10-yr	Percent Treated	Single Treatment	1-yr	5-yr	10-yr
A-21	2	No target					No target					No target				
B-1	2	40%	300	600	1,800	3,200	40%	200	320	500	1,000	40%	200	1,000	3,000	4,600
B-2	3	No target					40 %	200	200	500	1,000	40 %	200	200	500	1,000
B-3	3	No target					40 %	200	200	1,200	2,400	70 %	1,000	2,000	4,000	6,000
B-4	3	No target					50 %	600	1,200	1,800	2,250	65 %	1,400	2,800	12,000	17,000
B-5 Upland	2	No target					40 %	200	320	500	1,000	40 %	200	320	500	1,000
B-5 Des/Semi	2	No target					No target					No target				
B-6	2	40 %	200	300	400	600	40%	200	200	500	1,000	40%	600	600	2,000	4,000
B-7	3	No target					40%	200	200	500	1,000	40%	300	600	1,200	2,000
B-8	2	No target					40%	400	1,600	8,000	16,000	40%	400	1,600	8,000	16,000
B-9	2	No target					40%	80	240	480	720	40%	80	240	480	720
B-10	2	No target					40%	50	50	100	200	40%	50	50	100	200
B-11	2	No target					40%	40	80	160	280	40%	40	80	160	280
B-12	3	No target					40%	80	200	500	1,000	40%	80	200	500	1,000
B-13	2	No target					70%	70	70	350	420	70%	70	70	350	420
C-1	3	No target					30%	200	200	200	400	30%	200	200	200	400
C-2	3	No target					30%	200	200	200	400	70%	200	200	200	400
C-3	3	No target					No target					No target				
C-4	3	30%	200	200	300	400	30%	200	200	200	400	30%	200	200	200	400
C-5	3	35%	300	300	600	800	35%	350	500	800	1,200	35%	350	500	800	1,200

TABLE 2.4

VEGETATION/FUEL MANAGEMENT TREATMENT ACREAGE TARGETS BY POLYGONS

NOTE: Unless otherwise indicated, all acreage figures are the maximum amount of a range starting at 0.

Vegetation Treatment		Alternative 1 No Action					Alternative 2 Integrated					Alternative 3 Maximum				
Target level		900-1,500/year					2,700-4,500/year					4,950-8,300/year				
Unit	FMZ	Percent Treated	Single Treatment	1-yr	5-yr	10-yr	Percent Treated	Single Treatment	1-yr	5-yr	10-yr	Percent Treated	Single Treatment	1-yr	5-yr	10-yr
C-6	2	No target					No target					No target				
C-7	1	No target					No target					No target				
C-8	2	No target					30%	200	200	200	400	30%	200	200	200	400
D-1		No target					No target					No target				
D-2		No target					No target					No target				

NOTE: No targets have been identified for Alternatives 4 and 5 since little to no vegetation management would be performed.

NOTE: The percent treated equals the actual acres treated; the actual project size would vary in size.

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CHAPTER 3.0 AFFECTED ENVIRONMENT

This chapter describes relevant environmental components of the SLD that would be potentially impacted by the proposed alternatives. While this chapter describes the *affected* environment, later in this EA, Chapter 4 (Environmental Consequences) analyzes the *effects* of the alternatives.

3.1 General Location and Setting

The BLM lands administered by the SLD are located in northwestern Utah and dispersed throughout 11 counties. The total number of BLM acres in each county and the corresponding county percentage are shown in Table 3.1 below:

TABLE 3.1

BLM SALT LAKE DISTRICT SURFACE MANAGEMENT ACRES BY COUNTY		
County	Acres	Percent of Total County
Box Elder	1,061,857	30.17
Cache	80	0.01
Davis	322	0.19
Morgan	1,005	0.26
Rich	170,775	26.40
Salt Lake	1,863	0.38
Summit	868	0.07
Tooele	1,910,218	43.30
Utah	105,699	8.30
Wasatch	1,402	0.18
Weber	40	0.01

Source: Mike Nelson, Realty Specialist, BLM SLD Office

There is considerable variation in the natural landscapes of BLM lands due to variations in elevation, precipitation aspect, and soils.

Elevation ranges from a low at the Great Salt Lake of 4,200 feet (average) to over 10,748 feet in the Deep Creek Mountains.

The physiographic areas involved are: Great Basin (mostly Box Elder and Tooele Counties), Middle Rocky Mountains (Rich County), Colorado Plateau (southeastern Utah County), and Columbia-Snake River Plateau (northwestern Box Elder County).

More detailed descriptions of the affected environment can be found in the respective planning documents; Box Elder RMP, Pony Express RMP, Randolph MFP, Isolated Tract MFP, and Park City MFP, as well as various activity plans.

3.2 Climate

The varied topography and geography results in different climates throughout the District. The climate, in turn, strongly influences ecological processes such as biological productivity, fire regime, soils, streamflow, erosion, and human uses of the land and resources.

Precipitation varies widely, both in amount and time of year. Annual average precipitation varies from less than 6 inches per year in the lower west desert elevations of Tooele and Box Elder Counties, to over 30 inches a year in the high mountains such as the Oquirrhs. (See Map 3 for Precipitation Zones.)

The District is characterized by hot summers and cold winters, with winter temperatures averaging below 32° F. and summer temperatures averaging above 77° F.

3.3 Physical Environment

3.3a Soils

The varied topography and climatic conditions are reflected in the soils. In a general way, soil types vary from the predominately dark brown loams of the mountains to the light brown sandy loams of the desert, and include extensive areas of rock outcrops, drifting sand dunes, and playa lake beds.

Soil interpretations (soil surveys) have been completed for 97% of the District and can be reviewed at the office or through the Natural Resource Conservation Service. Soils are addressed and identified in the Box Elder RMP (page 81), Tooele Grazing EIS (pages 29 & 30), and the Randolph MFP (pages 2-4).A management concern is to minimize loss of soil and maintain the soils natural and productivity functions within the district.

Factors such as slope, climate, parent material, vegetation, and drainage combine to form unique interactions distinguishing soil types. Soils of the steeper mountain slopes (Sheeprock, Pilot, and Deep Creek Mountains), ridges, and rock outcrops are generally shallow and rocky. Deeper soils occur on the Wasatch Mountains in Rich County and isolated tracts of public land along the Wasatch Front. Rich County alkali bottoms and Great Salt Lake mud flats are fine textured and clayey with poor drainage.

Northern Great Basin soils are typically cool-to-warm and dry, and have low organic-matter contents. Soil horizons are commonly the result of movement and accumulation of salts, carbonates, and silicate clays, locally resulting in caliche layers (hardpan). Large areas of low precipitation have saline-sodic soils (Eastside Draft EIS/Chapter 2/page 23).

3.3b Water

Water yield depends on many factors, including soil type, precipitation, and vegetation cover. According to a report by Dobrowolski (1998), at least 11.3 inches of precipitation is needed to provide an increase in percolation into ground water to provide improvement in spring flows. On the other hand, Roundy states that there is no potential for increasing water yield when precipitation averages less than 15.6 inches per year (Roundy, 1997). Conversion of shrubs and trees to grasses and forbs would result in less precipitation being lost to evapotranspiration so that more water percolates through the soil to feed streams, ground water, and surface run off (Hibbert, 1983). Water yields on pinyon-juniper sites is reduced by evapotranspiration and foliar tree interception (Gifford, 1973). Studies show that fire causes infiltration rates to decrease immediately after fire for the short-term for oak, juniper, bunchgrass and shortgrass types (Hester, et al., 1997).

Evidence shows that greater accumulations of snow occur following fires by removing some of the tree cover. These small openings within the woodlands provide positive water yields. Response to treatment varies considerably among vegetation types. It appears to be largest in chaparral or thick mountain brush, and somewhat less in aspen (Hibbert, 1983). Small increases in water yield are expected by eradicating sagebrush, pinyon or juniper trees on favorable sites (Brown, 1987; Hibbert, 1983).

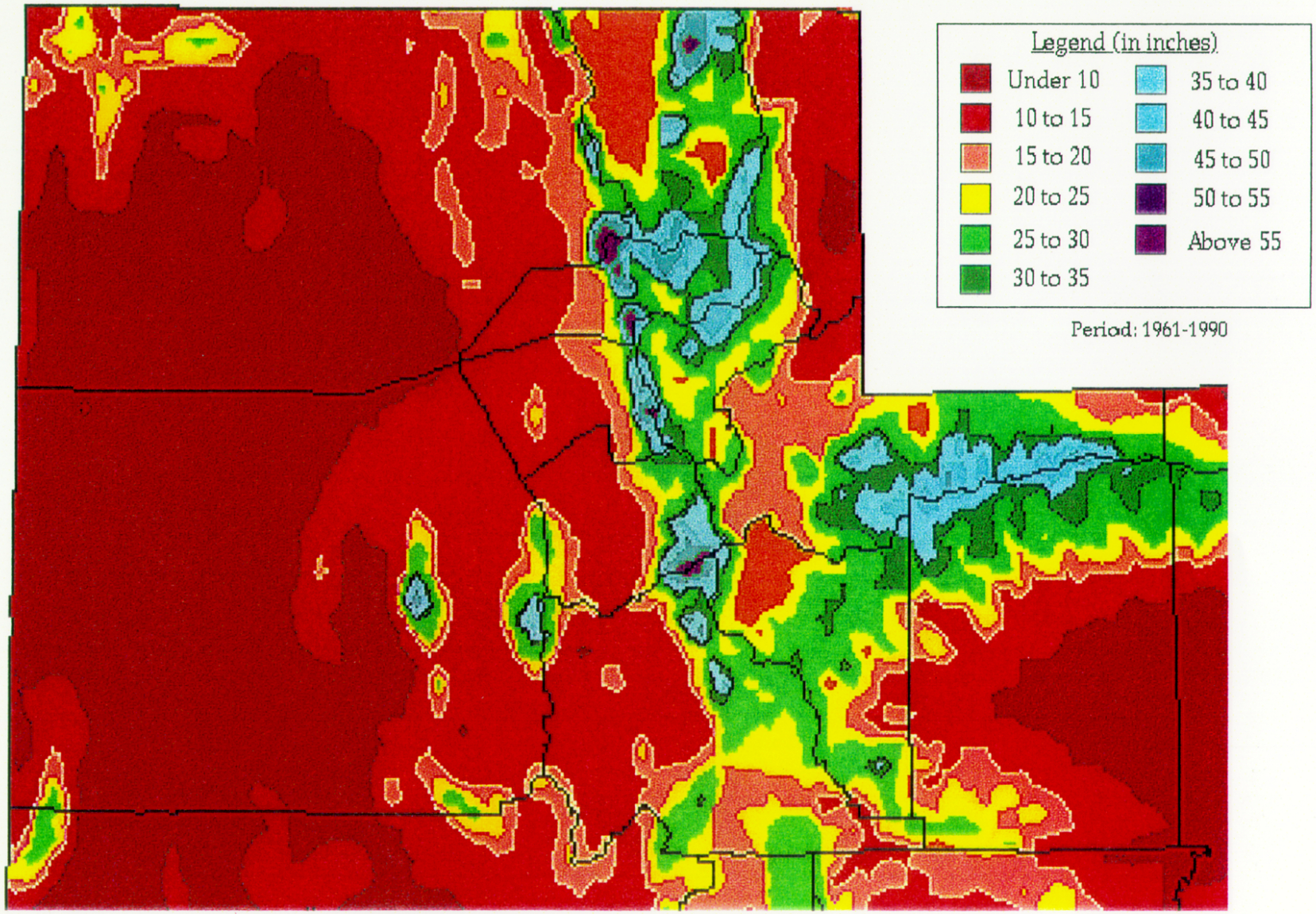
Grass is a more efficient user of water than woody plants such as sagebrush and weeds (USDA, 1967). Consequently, pinyon, juniper, and aspen use more water than grasses and forbs. Woody plants that commonly occur on riparian areas transpire even greater quantities of water than other types of vegetation.

It is anticipated that if woodlands are treated, as well as the more mesic ranges, spring flow will increase by about 2% during a period of 30 years for areas that receive at least 13.8 inches of precipitation. After that time, vegetation will exclude the gain. It is estimated that about 40% of the area that is treated with fire or by other means will benefit hydrologically from the precipitation capture.

3.3c Air Quality

Areas currently exceeding the National Ambient Air Quality Standards for PM_{10} within the boundaries of the SLD include Salt Lake, Utah, and Weber Counties. Davis County, located between Weber and Salt Lake Counties, is not considered a non-attainment area. Impacting these areas should be avoided through proper smoke management techniques. Wildland fire and prescribed fires occurring in the following polygons would have the potential to impact the above non-attainment areas: Skull Valley (A-3), North Oquirrh (A-8), Tooele and Cedar Valleys (A-9), South Oquirrh (A-10), Fivemile Pass (A-11), Lake and West Mountains (A-12), Stansbury Island (A-15), Lakeside Mountain (A-16), Rush Valley (A-17), Wasatch Front (A-21), East Onaqui (B-6), Thorpe Hills and Tintic Mountains (B-7), Antelope Island (A-19), Wetland Management Areas (B-13), Cedar Mountains (C-3), Stansbury Mountain (C-4), and Onaqui and North Simpson Mountain (C-5).

Average Annual Precipitation
BLM Salt Lake District



Map 3

3.4 Human Uses and Values

3.4a Livestock Grazing

Livestock grazing can be categorized by summer, winter, and fall/spring grazing allotments. Approximately 30% of the range is summer use, 60% is winter use, and 10% is fall/spring use. Livestock graze on summer allotments May 1 through October 15 at higher elevations from 6,500 to 9,000 feet. Most of the summer ranges are cattle allotments, with a few allotments managed for sheep use. Refer to Table 3.2 for a summary of operators.

Winter allotments are used by cattle and sheep from November 1 through April 30. Sheep are usually trucked or trailed from summer range to winter allotments. Cattle are generally released to public land from adjacent private ranches or trailed to the allotments. At the end of the season, livestock are gathered and put onto private pastures. Large operations, especially corporation ranches, generally truck cattle to and from their private pasture or public land allotments.

Summer livestock allotments are usually within the B and C polygons. Winter livestock allotments are in the A and some B polygons. Some allotments are considered spring allotments and are grazed in the early spring prior to livestock going to their summer pasture elsewhere (private or federal lands). Sheep are usually lambing and/or being sheared on these allotments. These can be problem allotments because livestock are grazing during growing periods.

TABLE 3.2
LIVESTOCK OPERATORS BY COUNTY

County	Operators	Cattle operators	Sheep operators	Both	AUMs Licensed	Allotments
Box Elder	96	82	10	4	51,260	59
Rich	66	51 (2 horse)	2	13	22,350	19
Tooele	117	82	29	6	106,299	69
Utah	18	7	11	0	2,569	10
Total	297	222	52	23	182,478	157

Range improvements, including fences, cattleguards, corrals, troughs, pipelines, and guzzlers are also affected by fire. Fences, serving as important allotment boundaries or pasture areas for livestock management, are the most common improvement damaged by wildland fire.

When wildfires occur in cheatgrass types or flash fuels, there is a 50% chance that at least 3 or 4 miles of fencing would burn. It is likely that these same fences could be cut to allow access for engines and fire fighting equipment. For every 2,000 acre fire, there is a 50% chance that at least three miles of fencing would be destroyed. With a 4,000 acre fire, there is a 75% chance that four to five miles of fencing would be destroyed. Any fire over 5,000 acres six to seven miles of fencing would be burned or damaged by suppression tactics.

Damages to cattleguards are primarily caused by suppression activity. The heavy traffic coupled with burned vegetation creates an erosion problem causing the cattleguard to become filled with dirt.

Damage to other improvements occurs less often: In the last ten years, two corrals and five water troughs have burned on public lands within the District, and two pipelines have been damaged by wildland fire. On the average, one guzzler is lost every year to fire.

At that rate, at least one corral is burned every five years; one water facility is burned every two years; and one pipeline is damaged every five years. An estimated 50% of every fire over 500 acres, one water tank and well facility are used. This use drains storage tanks that could take at least a couple of days to fill at most springs which adds extra wear on well pump facilities by continuously pumping at the maximum amount. In some instances, there have been dipping and foaming agents used in water storage sources or natural ponds.

The combination of the damage to troughs and the intense heat of the fire resulted in melting the black polyethylene pipe. In the last five years, there have been a couple of instances when pipelines have been damaged by heavy fire equipment driving over the line.

3.4b Woodland and Vegetative Products

Woodland and vegetative product types consist of Douglas fir, white fir, lodgepole pine, Engelmann spruce, and quaking aspen on the highest elevations (primarily polygons C) to pinyon and juniper on the foothills and basins between 5,300 and 7,200 feet in elevation in polygons C and B. Types of woodland products harvesting occurring include live cedar post cutting, green firewood cutting, dead and down firewood cutting, and Christmas tree cutting (mostly juniper). Seed gathering of shadscale, Gardner saltbush, forage kochia, rabbitbrush, winterfat and Indian ricegrass is common by commercial gatherers and increases each year. Most of the seed gathering occurs in polygons A and B. Some other uses that occur, but are not significant are collecting juniper trees for Bonsai making, harvesting of wild alfalfa and grass hay, pine nut collecting, and wildling collecting for landscaping.

Areas managed for firewood and Christmas trees are covered by a wood product plan. Harvesting also occurs in burned or treated areas of mostly juniper (dead standing or dead and down wood) to reduce fuel build up and juniper invasion in project areas.

3.4c Recreation

There are eight interpretive sites, five recreation areas, and four developed campgrounds. Most of the District is available for dispersed recreation, defined as recreation that is not related to a managerial site, and cannot be measured as occurring in any one particular place. Recreational use is counted as visitor use numbers which are based on Visitor Use Days (VUDs). A VUD can be defined as any calendar day, or portion thereof, on which an individual visits public lands with the primary purpose being recreational in nature. The visitor use reflected by the following numbers is based on Special Recreation Permits (SRP) and Letter of Authorization data. It is difficult to project casual (non-permitted) use numbers, therefore they are not included in this data. Casual visitor use numbers are expected to be significantly higher than SRP numbers.

RECREATION AREA		1995 VUD	1996 VUD*	1997 VUD
1. Fivemile Pass Recreation Area	Polygon A-11	2,664	332	1,200
2. Stansbury Island Mountain Bike Trail	Polygon A-15			
3. Bonneville Salt Flats Recreation Area	Polygon D-1	3,093	4,943	4,271
4. Horseshoe Knolls Recreation Area	Polygon A-3	1,310		3,475
5. Knolls	Polygon D-1	607	453	1,402
INTERPRETIVE SITES				
1. Pony Express National Historic Trail/ Back Country Byway	Polygon B-6	81		4,050
2. Simpson Springs Station/Pony Express Trail	Polygon A-3			
3. Canyon Station/Pony Express Trail	Polygon A-1			
4. Transcontinental Railroad Grade Back Country Byway	Polygon A-5, A-20, B-5, B-13			234
5. Silver Island Mountains Back Country Byway	Polygon A-2	70		
6. Staley Memorial Site	Polygon C-5			
7. Horseshoe Springs Wildlife Viewing Area	Polygon B-13			
8. Dry Creek Wildlife Viewing Area	Polygon B-11			
DEVELOPED CAMPGROUNDS**				
1. Simpson Springs Campground	Polygon A-3	253	257	290
2. Clover Spring Campground	Polygon C-5			
3. Little Creek Campground	Polygon B-8			
4. Birch Creek Campground	Polygon B-10			

* 1996 data does not include Letter of Authorization numbers
** Campground data based on fees collected on side.

3.4d Wilderness Values

Although several wilderness bills have been introduced in Congress over the past 10 years, as of this date, there is no designated wilderness on public lands in the SLD. However, should wilderness designation occur in the future, management of wilderness would be accomplished by wilderness management plans, framed and written to fit each individual wilderness area.

There are three Wilderness Study Areas (WSAs): North Stansbury Mountains (10,480 acres in C-4), Cedar Mountains (50,500 acres in C-3), and North Deep Creek Mountains (38,170 acres in C-1). These areas are managed according to the 1995 "Interim Management Policy and Guidelines for Lands Under Wilderness Review" (IMP, pages 48-49). Fire is generally a natural component of wilderness ecosystems. If fire suppression tactics are used within a WSA, caution must be taken to avoid unnecessary impairment of an area's suitability for preservation as wilderness. Primary concern with fire suppression is to avoid the impairment of the area's suitability for preservation as wilderness by applying "light-hand-on-the-land" fire suppression tactics. Among other considerations, this means the following: all uses of earth moving equipment within a WSA require authorization; priority for placement of large fire camps should be outside WSAs; use of motorized vehicles and mechanical equipment during mopup should be minimized; the use of natural fire breaks and existing roads is encouraged when planning fire breaks.

House Resolution-1500 (H.R. 1500), introduced into every session of Congress since 1989, proposes 5.7 million acres of wilderness in the State of Utah. Approximately 120,000 acres of those lands are in the SLD, and include both WSA and non-WSA lands. H.R. 1500 represents the wilderness proposal of the Utah Wilderness Coalition (a coalition of several environmental groups). H.R. 1500 lands outside of WSAs are not subject to the wilderness IMP. In a letter to Congressman Hansen dated April 22, 1994, BLM Assistant Secretary of the Interior, Bob Armstrong, states that Secretary Babbitt has instructed the BLM to "pay careful and particular attention" to development proposals that could limit Congress' ability to designate certain BLM areas in Utah (H.R. 1500 lands), even though these areas have not formally been designated as WSAs. H.R. 1500 areas are as follows:

1. Little Goose Creek	Polygon B-4	1,300 acres
2. Newfoundland Mountains	Polygon C-8	23,300 acres
3. Silver Island Mountains	Polygon A-2	27,200 acres
4. Dugway Mountains	Polygon C-6	23,100 acres
5. Big Hollow (south Stansbury Mountain)	Polygon C-5	4,200 acres
6. North Stansbury Mountains	Polygon C-4	12,020 acres
7. Cedar Mountains	Polygon C-3	11,600 acres
8. North Deep Creek Mountains	Polygon C-1	16,408 acres

Other areas in addition to those above that have been mentioned by interest groups as having wilderness values are: Pilot Range (C-2), Crater Island (A-2), Great Salt Lake Desert, North Cedar Mountains (C-3), Oquirrh Mountains (A-8, A-10), Grouse Creek Mountains (B-3), Stansbury Island (A-15), Onaqui Mountains (C-5), and the South Cedar Mountains (C-3).

3.4e Cultural/Native American Concerns

The SLD contains a wealth of cultural resources. Sites range in age from surface finds of projectile points that are in excess of 10,000 years old to post-World War II rocket launching sites.

Most of the prehistoric sites are undated. However, those that do contain diagnostic artifacts can be attributed to Paleo-Indians, Archaic Peoples, the Great Salt Lake and Sevier Fremont, and Numic Peoples. The majority of the historic sites reported are dated later than 1850 and are generally thought to be the result of Euro-American activities. However, sites attributable to Chinese railroad workers, Russian emigrants, and historic Native American Groups are also known.

Significant prehistoric site types include dry caves and rockshelters (often containing cultural deposits spanning several millennia); rock art sites (pictographs and petroglyphs); lithic scatters (sites where stone tools were manufactured and maintained); quarry sites (locations where prehistoric peoples obtained raw materials for the manufacture of stone tools); open campsites or habitations; and stone and wood alignments. Important historic site types include transportation networks (historic trails, stage routes, railroads, roads, and highways); mining sites; remnants of historic ranches and homesteads; Civilian Conservation Corps (CCC) Camps and CCC constructed range improvements; World War II and later defense related sites; and the Bonneville Salt Flats.

Currently, three sites are listed on the National Register of Historic Places: Bonneville Salt Flats (D-1), the Transcontinental Railroad Grade (A-5, A-20, B-5, B-13), and the Ground to Air Pilotless Aircraft Blockhouse and Launch Pad (A-3). The Pony Express Trail (A-1, A-3, A-9, A-11, A-13, A-14, A-17, B-1, B-6, B-9, B-11, B-12, B-13, C-5, C-6) and portions of the California Trail(s) (A-2, A-3, B-2, C-3, D-1) are included in the National Historic Trails System.

Specific cultural resource concerns are identified by specific polygons in Appendix A.

Historically, the District was the home of various Numic speaking groups, including members of the Ute, Goshute, Eastern, Western, and Northwestern Shoshone Tribes. All of these groups continue to maintain an interest in the public lands. BLM would continue to consult with these groups on projects in areas where they have expressed concerns.

3.5 Natural Resources

3.5a Wild Horses

Tooele County provides forage for two wild horse herds, Cedar Mountain and Onaqui Mountain; both herds existed prior to the 1971 Wild and Free Roaming Horse and Burro Act. There are approximately 449 wild horses in the Cedar Mountain Herd and 134 horses in the Onaqui Herd as of December 17, 1997.

3.5b Vegetation

Vegetation diversity can be seen in the contrasts among the Bonneville Salt Flats, sagebrush grasslands on the Crawford Mountains, oak and maple woodlands in the East Tintic Mountains, grasslands in the Curlew Valley, desert shrub in Puddle Valley, bristlecone pines in the Deep Creek Mountains, juniper woodlands in the Grouse Creek Mountains and aspen groves in the Bear River Mountains.

The formal vegetation classes include: sagebrush, grasslands, salt desert shrub, pinyon-juniper, mountain shrub, aspen, riparian, lodgepole pine and other conifers. For analysis purposes, these classes have been combined into five groups. All of the polygons have been placed into the group which best represents the vegetation within the unit. Most of the polygons have a complex of vegetation types and portions of any one unit may fit in any or all of the vegetation types. These groups are described as follows:

Desert/Semi-Desert: The dominant vegetation in this type is greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, cliffrose, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper trees are very scattered. Associations of these plants vary throughout the type and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Fire management units (polygons) which have been impacted by cheatgrass and other annual and exotic species invasion include A-3, A-15, A-19, A-20, C-7, and D-2 for a total of 639,091 acres.

Fire management units which have not been impacted by the invasion of annuals and other exotic species, and where there is less of a threat of conversion taking place, include polygons A-1, A-2, A-5, A-7, B-2, and B-5 (30%) for a total of 616,527 acres.

Upland: Vegetation in this type is mainly big sagebrush, black sagebrush, bitterbrush, cliffrose, mountain mahogany, serviceberry, pinyon, and juniper with a mixed understory of bluebunch wheatgrass, cheatgrass and various forbs. Douglas fir, white fir, quaking aspen, and snowberry are found on north facing aspects and drainage bottoms at higher elevations. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Fire management units (polygons) for which all or part of the unit is included in the upland type are: A-11, A-12, A-13, A-14, A-16, A-17, A-18, B-1, B-4, B-5 (70%), B-6, B-7, B-8, B-10, B-11, C-3, C-5, C-6, and C-8, for a total of 1,058,765 acres.

Mountain: Vegetation in this type is comprised of big sagebrush, black sagebrush, mountain mahogany, serviceberry, and scattered juniper. Grasses are bluebunch wheatgrass, mountain brome, and bluegrass. Forbs include phlox, Indian paintbrush, and others. Upper elevations contain dense stands of quaking aspen, lodgepole pine, Douglas fir, alpine fir, and snowberry. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Fire management units (polygons) within the mountain type are: A-4, A-8, A-10, B-3, B-9, B-12, C-1, C-2, and C-4, for a total of 204,878 acres.

Wetlands : These areas are dominated by pickleweed, salt grass, cattails, bulrush, sedges, carex, and other aquatic vegetation species, as well as open mudflats, and scattered areas of desert and semi-desert shrub species as described above. The only polygon within this type is B-13 for 56,254 acres.

Urban/Agriculture: These areas are dominated by urban development and farmlands. Polygons within this area include A-6, A-9, and A-21, for a total of 17,785 acres.

- **Native to non-Native Conversion:**

Plant communities of the west look different today than they did 200 years ago. Most of these differences have come about because natural fire regimes have been altered, which has changed the distribution, composition, and structure of rangeland vegetation and the introduction of introduced exotic annuals. Many locations have had the

fire return interval lengthened because of fire suppression and livestock grazing, which removes the fine fuels that carries fires in several fuel types. This general decrease in fire frequency in these locations has allowed conifers to expand into non-forested areas at the forest-upland boundary; tree densities to increase in savanna-like stands of juniper and aspen (i.e. juniper encroachment of upland shrub areas); and shrub densities to increase, which has caused herbaceous vegetation to decrease or become nonexistent. In other areas, the converse occurs and fire frequencies have increased. The most pronounced change occurs in our more arid sites where the introduction of exotic annuals (i.e., cheatgrass, Bromus tectorum) into these vegetation types has initiated wildland fire at short fire return intervals into areas where fire was not a part of the natural regime. This change has also caused monocultures in some landscapes.

This shorter fire return interval diminishes shrub cover and once dominant bunchgrasses in favor of the introduced exotic annuals. This scenario provides more fine fuels in understories, especially where fire suppression and grazing has not removed the buildup in plant material. Fuel composition change of this nature also changes the fire intensities to where the native vegetation is killed or the fire return interval is too short for natural regeneration allowing the introduced exotic annuals and other invaders to displace the native vegetation. This loss of cover and change in the competition for soil nutrients can also alter the exposure of the soil raising the risk of wind and water erosion and reducing water storage and production.

Desert Shrub (Salt Desert Shrub): Historically, wildland fire is not part of healthy communities of these vegetation types; when fires occurred, they were small and scattered and had little effect on the vegetation community. Introduced exotic annuals have successfully invaded these vegetation types over the years to become the dominant vegetation. The addition of these fine fuels has allowed the once barren areas between plants to fill in, making a more contiguous fuel base which, once ignited, spreads wildfire much more readily and burns many more acres. Consequently, most of this conversion has occurred due to wildfires. Over the past 20-30 years, many areas have sustained an increase of acreage, resulting in large blocks of monoculture vegetation. As the acreage of cheatgrass increases, wildfire frequency and intensity increases, the fire return interval shortens, the difficulty to control wildfires increases, and the complexity of suppression operations would increase suppression costs. (See Figure 3.1.)

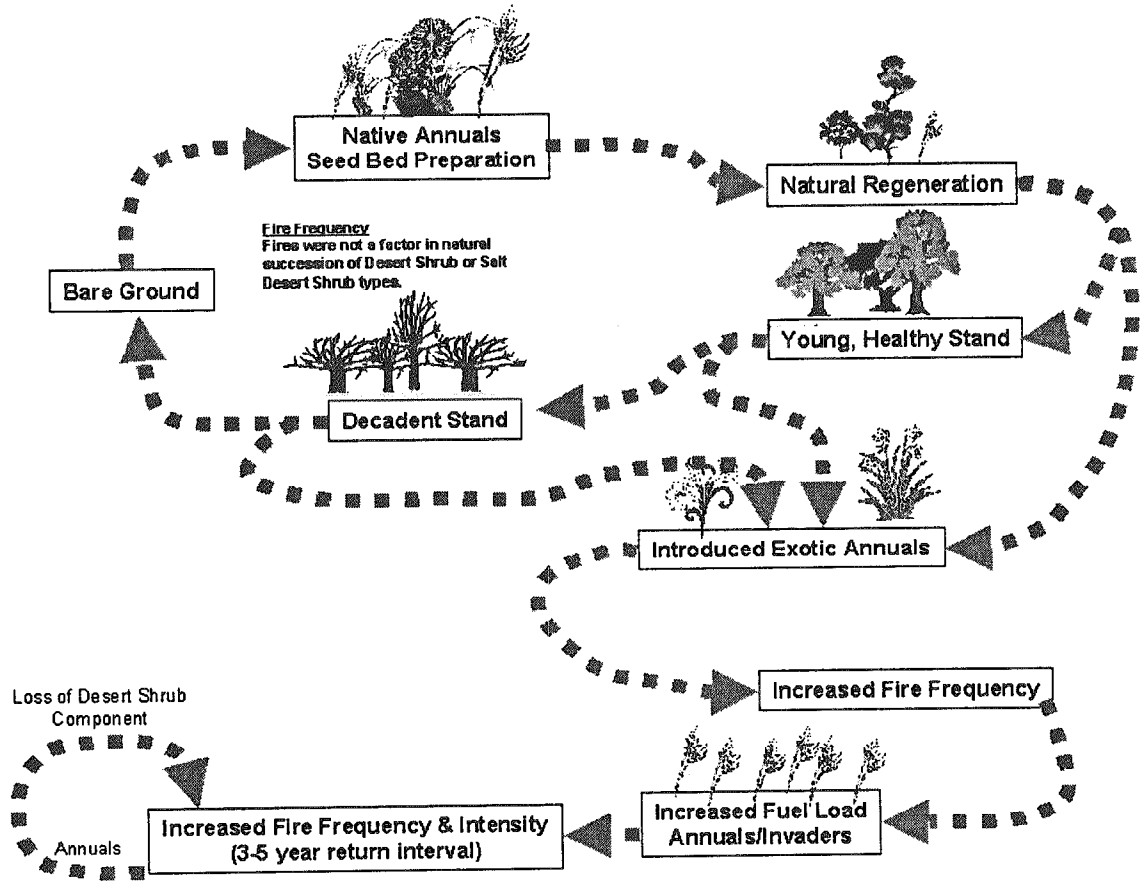


Figure 3.1 Salt Desert Succession

Semi-Desert Shrub: In this vegetation type, introduced exotic annuals are a problem similar to those mentioned in the desert shrub type; the difference is that stands of big sagebrush and juniper are more prevalent in these types. Fuel loading in this vegetation type is generally higher. The past several years of aggressive fire suppression and active livestock grazing has increased the risk of catastrophic events. (See Figure 3-2)

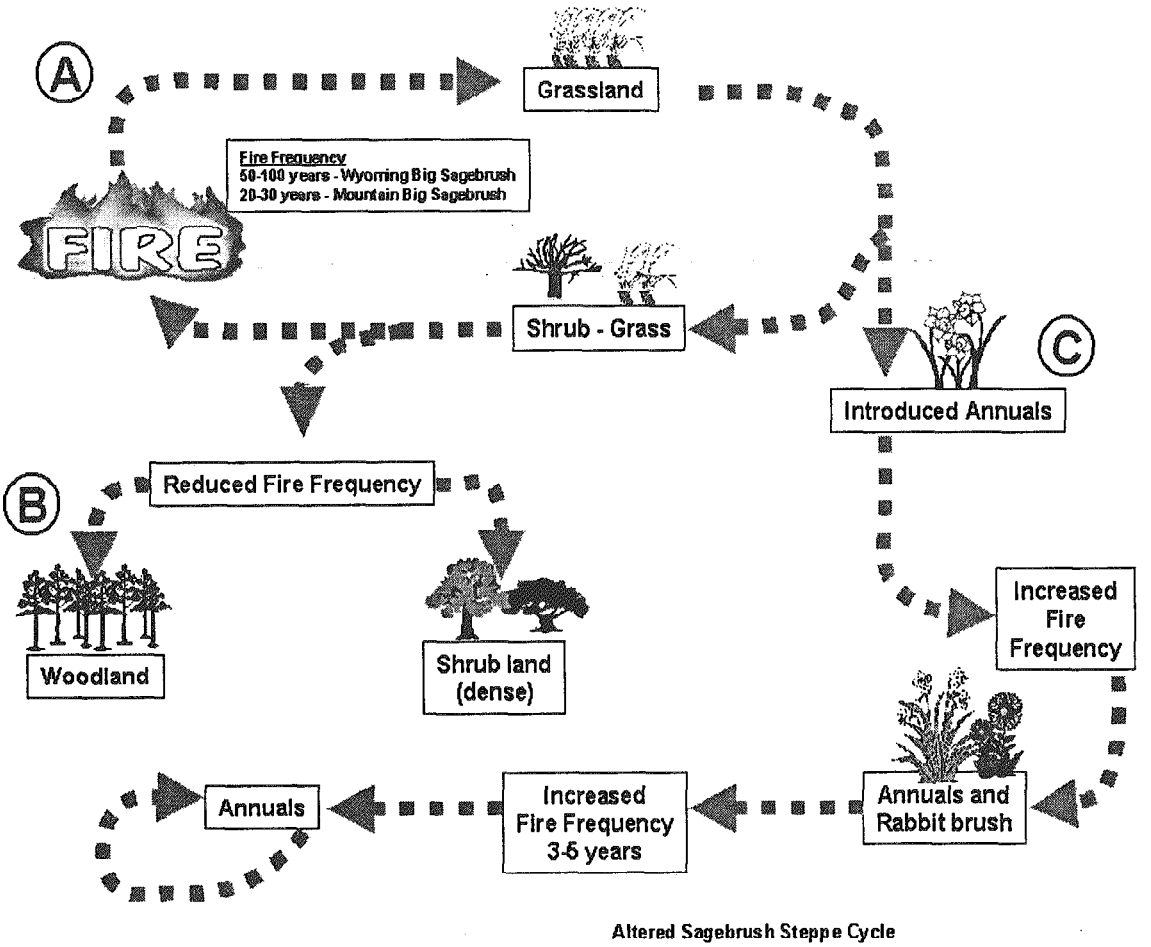


Figure 3.2. Semi-desert/Upland Succession.

Three common pathways of succession in the semi-desert/upland community. Pathway A represents a succession from a grassland to a shrub-grass dominated plant community, with fire acting to move the shrub-grass community back to a grassland. Pathway B represents succession of a shrub-grass dominated plant community to either a woodland (dominated mostly by juniper) or a shrubland, caused by a reduction in fire occurrence. Pathway C represents succession of a shrub-grass dominated plant community to a community dominated by introduced annual grasses, characterized by an increase in fire occurrence. Introduced annual grasses have invaded these communities partially as a result of excessive grazing pressure. Once dominated by introduced annual grasses, the community tends to remain this way because of frequent fire, which prevents shrubs from establishing. (Adapted from Vavra et al. (Editors), 1994. Ecological Implications of Livestock Herbivory in the West.) (Eastside Draft EIS/Chapter 2/Page 94.)

(Semi-desert type is more susceptible to vegetation conversion due to the moisture regime and landscape topography.)

Upland: Sagebrush and juniper stands are the dominant vegetation in this type; however, historically, cool season bunchgrasses were more common in the lower elevation of this type. The areas once occupied with the bunchgrasses have yielded to other more volatile perennials and introduced exotic annuals. The increase in volatile fine fuel is an encroachment in this vegetation type and has changed the fire regime.

Another encroachment problem occurs in this vegetation type. Fire return interval has been lengthened due to past aggressive fire suppression, allowing juniper to successfully invade into the sagebrush stands. The noticeable difference is that juniper is now more prevalent at lower elevations.

Sagebrush: The natural regeneration cycle for the sagebrush vegetation type has been altered through aggressive fire suppression and active heavy livestock use. Wildfire was a natural part of this vegetation type, experiencing a stand replacing event, generally every 50-100 years. Removing wildfire has created a situation that has allowed the densities of the sagebrush to increase while decreasing several grass species and reducing the diversity of the vegetation type. In several areas, the sagebrush has become a monoculture with old, even aged densely populated stands which are decaying and susceptible to devastation from disease or wildfire. The decline in stand health also contributes to the encroachment into these stands by juniper. Upper elevations of this vegetation type contain pockets of aspen and high country conifer which have unique fuel loading characteristics, explained in the mountain vegetation type. These pockets generally occur on north facing slopes.

Juniper/Closed Canopy Juniper: Past aggressive fire suppression has also altered the juniper vegetation type. Lack of wildland fire has allowed these stands to increase in density by out-competing understory plant species and eventually eliminating them. This situation has side effects which over time eliminates the seed bank in the soil needed for natural regeneration, increases soil erosion, and depletes the groundwater capabilities in surface springs and shallow wells. The dispersed junipers with their open canopies do not easily carry a fire. However, scattered in this vegetation type are pockets of heavy juniper stands where the canopies have closed. These dense stands present a more hazardous fuel situation than the dispersed junipers. When the live fuel moisture dips below the 90% level, the areas become very volatile and large wildland fires have occurred. These fires are very difficult to control, raise suppression costs, and jeopardize fire fighter and public safety.

Mountain: This vegetation type consists of stands of quaking aspen, lodgepole pine, white fir and snowberry. Sagebrush and juniper stands are still prevalent and contribute similar fuel loading problems. The moisture regime and elevation tend to lessen the intensity, frequency, and complexity of these wildland fires.

High Country Conifer: This area occurs on north aspects and more protected areas which retain snowpack longer in the higher elevations in this vegetation type. In some areas, there are stands of old white fir and Douglas fir, that during drought years when fuel moisture is low, become very susceptible to naturally ignited wildland fire. These old stands generally have high volumes of dead and down heavy fuels resulting in long duration, high intensity fires which are devastating to the microbiotic crusts and to the soils.

Aspen: A small amount of the District contains stands of aspen that have been threatened by Douglas fir, white fir, and Engelmann spruce encroachment. Prescribed fire can be used to rejuvenate these stands and eliminate the encroachment problem if these sites are treated while the conifer densities are low enough to allow low intensity burns. This would prevent aspen sites from evolving into late seral conifer communities.

♦ **Scientifically Significant Species:**

Bristlecone Pine (Pinus longeava): Great Basin bristlecone pine occurs in the northern Deep Creek Mountains at elevations above 9,000 feet along the ridge lines between Goshute, Reilly, Hardscrabble, and Pole Canyons. This species is scientifically significant because it tends to live to a great age and can be used to study Holocene climatic trends in the Great Basin. While some of the oldest known specimens in parts of the Great Basin are over 4,000 years old, those found in the northern Deep Creek Mountains are probably not more than 2,000 years old, although no coring of specimens has been done. Bristlecone pine is not a fire resistant species, but because of their tendency to grow along rocky southwestern exposures, they are frequently missed by fire events and continue to survive to a great age.

The occurrence of Bristlecone pine should be given some consideration during fire suppression activities if the opportunity exists to minimize damage to the oldest and most important groves.

Hybrid oak (Quercus gambellii X turbinella): During the Altithermal time period (6,000 to 10,000) years ago, Quercus turbinella, a small- leafed, evergreen oak species, had a widespread distribution that included much of northern Utah. Today it occurs only in the Washington County area. A hybrid version of this oak, crossed with the widespread Gambel oak, still occurs in certain favorable locations in northern Utah. This hybrid has some of the characteristics of both Gambel and Turbinella oak. It has smaller spiny tipped leaves which are retained almost all winter. It grows on southwestern facing slopes at between 5,200 to 5,600 feet in elevation. This micro environment maximizes the amount of freeze-free days which allow this hybrid to continue to survive outside of its expected range. There are

several places that these hybrids occur, but the most favorable would be the North Oquirrh Mountains in the Flood and Pass Canyon areas.

While this hybrid is not threatened or sensitive and is no more fire sensitive than common oaks, it is unique and does have some scientific interest in the study of Holocene climatic changes in this part of the Great Basin. The occurrence of hybrid oak should be given some consideration during fire suppression activities so that bulldozers and other mechanized equipment do not destroy or damage the known groves.

3.5c Riparian

Perennial streams are important water sources for wildlife, livestock, aquatic habitat, and agricultural and domestic uses. Riparian habitat typically consists of narrow bands of vegetation, seeps, and springs and provides habitat for higher densities and diversity of wildlife species than any other habitat type. Donner and Bettridge Creek and Raft River (Box Elder County), and Laketown Canyon (Rich County) watersheds provide habitat for T&E and sensitive species fish. Flora species include: willow, cottonwood, spruce, fir, river birch, chokecherry, currant, wildrose, sedges, rushes, and grasses. Approximately 177 miles and 29,002 acres have been identified, (1989 Salt Lake Riparian Area Strategic Plan), in the following proportions: 2% desert/semi/desert, 70% upland and 28% mountain. Program goals are to maintain or improve riparian areas to a properly functioning condition and to meet management needs according to allotment and habitat management plans. Wetland habitat (B-13) is associated with Horseshoe Spring (Skull Valley), Rush Lake (Rush Valley), Salt Wells and Blue Springs (North end of Great Salt Lake) and Utah Lake (Utah County.)

3.5d Wildlife/Habitat

The public lands contain a variety of wildlife habitat types ranging from mud flats and salt desert shrub up through small parcels of sub alpine forest. Approximately 250 wildlife species utilize these habitats. Most of these species are neotropical migratory birds present only during the spring and fall. However, many of these bird species are year long residents, as are about 70 species of mammals, 10 fish species and 17 reptiles and amphibians.

These lands support an abundance and variety of wildlife that are valuable for their social and economic benefits. As the quality and quantity of wildlife habitat are impacted, the rich array of habitat on public lands becomes increasingly important to maintain a national fish and wildlife heritage. The need to manage this heritage has been recognized in various laws and Executive Orders such as the Federal Land Policy and Management Act (FLPMA).

The BLM does not manage the wildlife species directly. This responsibility belongs to the Utah Division of Wildlife Resources and the U.S. Fish and Wildlife Service. However, the BLM does manage a large portion of the habitat utilized by these wildlife species. The primary means of this habitat management is through input into resource management planning. This FMP is one method used by the BLM uses to fulfill the obligation of FLPMA for wildlife habitat management.

3.5e T&E and Utah BLM Sensitive Species

There are 79 wildlife species, four species of insects and four species of mollusks which are considered sensitive species. There are also 43 plant species which are considered sensitive. Of the 79 sensitive wildlife species, three have gone extinct, three have been extirpated from the state of Utah, five species are endangered, two species are threatened, three species are Proposed or Candidate species being considered for listing by the US Fish & Wildlife Service, 46 species are Utah BLM Sensitive Species, and 17 species are of concern within the Salt Lake District. There are also four sensitive insect species and four species of mollusks (three are BLM Sensitive Species and one is Proposed for listing). Within the sensitive species of plants, there is one species Proposed for listing, 12 species which are Utah BLM Sensitive Species, and 29 species which are of special concern or interest within the district. Refer to Appendix B for a listing of all the special status species found within the District, general location by county, and status by species, as well as by general habitat type within which each species occurs.

CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES CONSIDERED

This chapter analyzes the potential *effects* of the proposed alternatives. The resources are discussed in the same sequence as in Chapter 3.

4.1 Safety

Definitions:
Short-Term: Impacts that would be experienced *during* the first two years of the alternative implementation
Long-Term: Impacts experienced from 3 to 10 years *after* the alternative is implemented

Relative Level of Safety Impacts:
Low: Low risk. The probability that a firefighter fatality would occur is extremely unlikely. In addition, major injuries would be unlikely. Minor injuries would be possible; however, the occurrence would be infrequent.
Mod: Moderate/normal risk. The probability that a firefighter fatality would occur is unlikely. Major injuries would be infrequent; minor injuries would occur regularly.
High: High risk. The probability that a firefighter fatality would occur is increased. Major and minor injuries would occur frequently.
NA: Not Applicable. The risk to firefighter safety is negligible since the activity being analyzed would theoretically not occur.

Alternative 1
Long-term risk to firefighter safety would increase in all fuel types due to an increase in hazardous fuels; specifically, as cheatgrass invasion progresses into the shrub and juniper zones, the potential for rapid and intense fire spread increases. Consequently, if current fire suppression/management continues and the hazardous fuel component is not adequately addressed, the potential for serious injury increases in the long-term. There is a probability that a greater number of wildland fires would escape initial attack and incident complexity would increase; consequently, the potential for firefighter safety to be jeopardized increases in these circumstances.

Alternative 2
Due to an integrated approach to wildland fire suppression and a target reduction of hazardous fuel accumulation, risk to firefighter safety could potentially be reduced in the long-term. Since the level of aggressiveness and types of resources utilized in this alternative would be highly variable, it would be difficult to determine a relative change in the degree of risk associated with incident complexity. However, it is anticipated that an increase in hazardous fuel reduction would enable suppression resources to contain a greater number of fires within the initial attack period. Potentially, in the long-term, fire growth and intensity could be limited through this alternative by allowing a safe reintroduction of wildland fire into areas of hazardous fuel accumulation and strategically establishing fuelbreaks and/or converting vegetation to less flammable fuel types.

Alternative 3
An aggressive approach to wildland fire suppression, along with an aggressive prescribed fire and hazardous fuels management program, could potentially increase the risk to firefighter safety in the short-term; however, the long-term risk could possibly decrease. This alternative would require a quick attack on wildland fires and expose more fire suppression personnel and resources during a relatively dangerous period of the suppression effort; consequently, this increases risk to firefighters. However, in the long-term, the aggressive approach to prescribed fire and hazardous fuel management may enable fire suppression personnel to contain a greater number of wildland fires within the initial attack period due to strategically located fuelbreaks and/or a reduction of hazardous fuel loading. Fuel treatments utilizing mechanical and/or chemical projects, strategically establishing fuelbreaks and/or converting vegetation to less flammable fuel types would help minimize exposure of firefighters, reduce hazardous fuel loading and lower associated risks. An aggressive prescribed fire management program coupled with a safe reintroduction of wildland fire into areas of hazardous fuel accumulation, while increasing fire fighter exposure in the short-term, would in the long-term, reduce fire growth, intensity and complexity.

Alternative 4
A minimal fire suppression approach with relatively little fuels management could potentially minimize risk to firefighter safety in the short-term; however, in the long-term, risk exposure could increase due to the increase in hazardous fuel accumulations. In addition, due to the potential for large fire activity with minimal suppression effort, the safety risk increases as wildland fire size and intensity increase. As fire size increases, multiple jurisdictions would likely become involved with various types of resources; this raises the risk to fire suppression personnel. Since management ignited prescribed fires would be negligible, exposure of firefighters to safety risks would also

be negligible. However, since the hazardous fuel situations would not be specifically addressed, hazardous fuel loading would continue to increase risk to fire suppression personnel in the short-term. Long-term hazardous fuel loading would decrease in FMZs 2 and 3 as the cumulative total acres burned normalizes with natural fire regimes. In FMZ 1 long-term hazardous fuel loading would continue to increase wildland fire size, intensity, and complexity.

Alternative 5
A maximum fire suppression approach with little or no hazardous fuel and prescribed fire management could potentially increase risk to firefighter safety in the short-term. This would require a quick attack on wildland fires and expose more fire suppression personnel and resources during a relatively dangerous period of the suppression effort; consequently, this increases risk to firefighters. This aggressive action would require a larger workforce that would increase the number of fires suppressed during initial attack and reduce acreage burned per year. However, in the long-term, wildland fires that escaped initial attack efforts would increase risk to firefighter safety and exposure to hazards would be of longer duration as fire intensities and complexities intensify with an increase in the number of acres with hazardous fuel loading.

Public Safety
The inherent risk to the general public would exist with almost any wildfire occurrence, depending upon accessibility. However, the most significant threat to the public would exist when wildfires occur within the wildland/urban interface; urban areas would continue to encroach into the wildland areas. Consequently, those alternatives where the risk to firefighters is "High" would significantly jeopardize the safety of the public. This impact would be lessened by increased public education which would inform people of the dangers associated with wildland fires.

Hazards
In our Fire Management Area descriptions, we have identified two areas of concern which may pose a safety hazard to firefighters and the public from unexploded military ordnance. These areas are near military withdrawal areas and are: 1) The Yellow Jacket mining area on the north end of Dugway Range in polygon C-6, and 2) an area referred to by the military as the Southern Triangle area which is the area surrounding the Rising Sun grid and is located around the area where the old river bed crosses the southern boundary of Dugway Proving Ground in polygon C-7. There may be other areas located around the military withdrawals that could contain unexploded military ordnance. In addition, mining hazards, including open pits and shafts, may be present in several of the polygons.

Specific concerns and constraints are identified by individual polygons in Appendix A.

4.2 Physical Environment

4.2a Soils

Wildland fires, prescribed fires, and vegetation treatments not only may impair soil function and productivity, but could also provide a positive impact by recycling nutrients (i.e., nitrogen) back into the soil. These activities could cause soil loss, organic matter reduction or removal, loss of microbiotic crusts, decreased infiltration, and other degrading effect. Events have occurred over the last 200 years that have altered the natural soil balance that maintains soil productivity and function. The transition to our current situation from the historical shows a general decline in soil productivity.

Wildland fire could reduce soil productivity. Unless all the organic matter, grass residue, needles, and all vegetation are consumed, loss of soil productivity may not be as high as it would be if soils were compacted and whole trees were removed from the site. Severe wildland fire could result in water-repellent soil conditions, which increases soil erosion when followed by intense rainstorms. In upland and mountain vegetation types, wildland fire usually produces a mosaic pattern. The residual wood that is left on site, disturbance from wildland fire usually has fewer implications for loss of soil productivity and function than disturbances which remove soil organic matter and decrease bulk density as well. Both water-repellent soil conditions and compacted soils would decrease soil functions (such as water infiltration, nutrient uptake, and biological activity) and would increase erosion, but the severity and longevity of declining soil productivity is generally greater under compacted soil conditions.

Disturbed areas are susceptible to both water and wind erosion. Severity of damage by either erosive method depends on the storm intensity and duration as well as the present moisture amount and form. Generally, the most severe erosion occurs within the first year following the soil disturbance. The erosion rate declines over the next 4-5 years, eventually returning to normal.

Desert & Semi-Desert:
Although research is limited with regard to introduced exotic annuals and soil productivity, there is evidence that the presence and persistence of these plants results in the loss of structural layering of above- and below-ground plant components. Increased fire frequency on rangeland dominated by the introduced exotic annuals (mainly cheatgrass), results in more soil exposure and greater susceptibility to erosive events. However, there is a high degree of uncertainty about how the invasion of introduced exotic annuals and wildland fire interacts across

landscapes. In the long-term, soil disturbance decreases respectively as suppression targets become more restrictive in Alternatives 1, 2, 3, and 5. "Natural Suppression" in Alternative 4 could result in moderate to high soil disturbance.

Upland:
Closed-Canopy Juniper: Soil disturbance within this vegetation type could be twofold. As the juniper mature and become more efficient in removing nutrients from the soil, the understory vegetation is removed. This process results in the exposure of the soil to the elements which causes more erosion. Wildland fires within this late seral ecological condition could lead to prolonged fire duration, which would increase the temperature and depth of soil heating, thereby causing volatilization of soil carbon and nutrients. After this type of event, accelerated erosion normally follows. Alternatives 1 and 5 suppression strategies and limited to no hazardous fuel reduction would increase the risk of soil disturbance in the old growth juniper, lengthen the fire return interval, and increases risk of catastrophic events. Alternatives 2 and 3 suppression strategies and more aggressive hazardous fuel reduction would, in the long-term, reduce the juniper density and allow the understory to return. As a result, these treatments would restore natural fire return intervals, fire intensities would decrease and reduce the risk of catastrophic events. However, under Alternative 4 with little or no vegetation treatment, the soil disturbance would probably be moderate to high.

Mountain:
High Country Conifer: High levels of fuels buildup on north aspects and stands of old white fir and Douglas fir would increase the spread and intensity of wildfire. High volumes of dead and down heavy fuels are not normally a factor in the behavior of wildfire. However, their consumption under dry moisture conditions would prolong fire duration and would increase the temperature and depth of soil heating, thereby causing volatilization of soil carbon and nutrients and greater susceptibility to erosive events. Alternatives 1, 4, and 5 would provide little or no vegetation treatments to reduce fuel loads which increases risk of fire occurrence and/or a catastrophic event. Alternatives 2 and 3 would reduce risk through vegetation treatments, however, overall risk is low since fire occurrence is low.

Mechanical vegetation treatments that retain the wood products on site serve two purposes: 1) preparation for a prescribed fire; 2) enhancement of soil productivity from the breakdown of the nutrients into the soil. A low intensity prescribed fire could also add to soil productivity.

Activities that establish the desired plant community or PNC (if carried out without a net negative impact on soils), are more likely to maintain a stable and available nutrient supply and reduce risk of nutrient loss from wildfire.

4.2b Water

♦ Water Yield

Due to low levels (below 12 inches) of precipitation, a water yield increase cannot be expected on the A-1, A-2, A-3, A-5, A-6, A-7, A-9, A-20, A-21, A-16, A-17, B-2, B-5, B-11, C-6, C-7, C-8, D-1, and D-2 polygons (approximately 2,170,616 acres). A slight water yield increase could be expected within the B-13 polygon (approximately 56,254 acres), and riparian habitat (28,422 acres) within the mountain and upland vegetation groups. Spring flow of about 2% water yield increase could be anticipated on A-15, A-19, A-4, A-5, A-10, B-3, B-9, B-12, C-1, C-2, C-4, A-11, A-12, A-13, A-14, A-18, B-1, B-4, B-6, B-7. B-8, B-10, C-3, and C-5 polygons (961,924 acres) over a 30-year period. Approximately 40% of the District is capable of showing an increase in water yield due to treatment (incorporating factors such as precipitation, vegetation condition and soil type).

An increase in water yield could benefit the water departments in Laketown City (A-13) and Wendover, Utah (A-4) and possibly adjacent private farms (i.e., A-11, A-12, B-8, and B-3).

Alternative 1
Approximately 90,985 acres (wetland-511, desert/semi-desert-11,271, mountain-7,863, and upland-71,345) could provide an increase of about 2% for spring/stream flow.

Alternative 2
Approximately 56,094 acres (wetland-full, desert/semi-desert-17,378, mountain-11,139, upland-27,577) could provide an increase of about 2% for spring/stream flow.

Alternative 3
Approximately 59,548 acres (wetland-full, desert/semi-desert-11,378, mountain-15,825, upland-32,345) could provide an increase of about 2% for spring/stream flow.

Alternative 4
Approximately 229,462 acres (wetland-121, desert/semi-desert-34,133, mountain-44,919, upland-219,192) could provide an increase of about 2% for spring/stream flow.

Alternative 5
Approximately 179,644 acres (wetland-203, desert/semi-desert-5,310, mountain-2,932, upland-9,519) could provide an increase of about 2% for spring/stream flow.

♦ Water Quality

Wildland Fire Suppression
Alternative 1
There would be 74,850 acres (2.4% of District) of public land impacted by fire if objectives are met, and up to 324,627 projected actual acres (10.2% of District) affected by fire.

In these areas there would be an increase in water runoff, loss of topsoil, and an increase in sedimentation of streams where present. These impacts would occur in the short-term on all burned areas. In the long-term, most of these areas would revegetate, soil erosion and sedimentation would decrease, and the impacts would be reduced.

Alternative 2
There would be 47,550 acres (1.5%) of public land within the District impacted by fire if objectives are met, and up to 247,156 projected actual acres (7.8%) affected by fire.

Compared to Alternative 1, there would be 27,300 acres less impacted by fire if objectives are met, and 77,471 projected actual acres less impacted by fire.

Other Impacts would be as described in Alternative 1.

Alternative 3
There would be 50,650 acres (1.6%) of public land impacted by fire if objectives are met, and up to 203,770 projected actual acres (6.4%) affected by fire.

Compared to Alternative 1, there would be 24,200 acres less impacted by fire if objectives are met, and 120,857 projected actual acres less, impacted by fire.

Other Impacts would be as described in Alternative 1.

Alternative 4
There would be 324,750 acres (10.2%) of public land impacted by fire if objectives are met, and up to 1,171,705 (36.8%) projected actual acres affected by fire.

Compared to Alternative 1, there would be an increase of 249,900 acres of additional lands impacted by fire if objectives are met, and 847,078 additional projected actual acres impacted by fire.

Other Impacts would be as described in Alternative 1.

Alternative 5
There would be 15,550 acres (.5%) of public land impacted by fire if objectives are met, and up to 79,943 projected actual acres (2.5%) affected by fire.

Compared to Alternative 1, there would be 59,300 acres less impacted by fire if objectives are met, and 244,684 projected actual acres less impacted by fire.

Other Impacts would be as described in Alternative 1.

Vegetation/Fuel Management
Alternative 1
There would be up to 13,200 acres of public lands where vegetation would be altered through the use of prescribed burning and mechanical/chemical treatments. Impacts from the burns would be similar to those described in Alternative 1, Fire Suppression.

Alternative 2
There would be up to 44,870 acres (1.4%) of vegetation treatments proposed, which is an increase of 31,670 acres from Alternative 1.

Impacts to water would be similar to those described in Alternative 1, but would impact up to an additional 31,670 acres of land.

Alternative 3
There would be up to 81,620 acres (2.6%) of vegetation treatments, an increase of 68,420 acres over that for Alternative 1.

Impacts to water resources would be similar to those described in Alternative 1.

Alternative 4-5
No vegetation treatments are proposed for these alternatives, so there would be no impacts to water resources.

4.2c Air Quality

The particulates of interest are the Total Suspended Particulate (TSP), matter less than 10 microns (PM_{10}). Researchers consider particles with diameters less than 10 microns to be inhalable. Over 90% of particulate emissions from wildland fires are 10 microns or less in diameter. The TSP emissions from burn projects were derived from the Simple Approach Smoke Estimation Model (SASEM) which has become the Bureau standard for predicting emissions from prescribed fires. All inputs to SASEM were held constant for each alternative with the exception of fire size. The fire size input was taken from the acres burned per year identified under each alternative. See Table 4.2 for additional information.

Carbon Monoxide (CO) is the most abundant gaseous air pollutant caused by wildland fires. Generally, CO is a product of combustion that is rapidly diluted at short distances from a fire and therefore poses little or no risk to community health. However, CO could be present at high enough levels near a fire to pose a hazard to firefighters, depending upon the concentration, duration, and level of activity of the firefighter at the time of exposure. Any impacts from CO would be short-term.

4.3 Human Uses and Values

4.3a Livestock Grazing

Wildland Fire Suppression
Alternative 1
Wildland fires in the salt desert shrub and black sagebrush communities (A and some B polygons, FMZ 1) would result in a loss of winter forage for livestock, primarily winter cattle and sheep ranges. At risk would be important forage species of Black sagebrush, shadscale, bud sage, gray molly, cliffrose, bitterbrush and Gardner saltbush. Disturbance to such species would leave the area open to invasion by annual and/or invader vegetation species.

Wildland fires on portions of B and C polygons would benefit areas where natural vegetation could regenerate after the fire, or the burned areas could be rehabilitated to prevent invading annuals.

Wildland fires, and the danger to livestock and personal property, would be a concern among livestock users. The greatest risk is to livestock on the summer grazing allotments (B and C polygons), as they would be there during the critical fire danger times.

Range improvements could be burned, damaged, or destroyed by wildland fire, or damaged by fire suppression tactics. The greatest risk to fences would be in the A and B polygons with the cheatgrass and other annual vegetation. As suppression strategies become more aggressive, the greater the risk to all improvements.

Alternative 2
Loss of winter forage for cattle and sheep on the allotments would be the same as Alternative 1, but on fewer acres.

With reduced wildland fires and burned acreage, there would be less danger to livestock on summer ranges.

Increased suppression strategies would lead to increased use of existing roads and trails, as well as the creation of new roads as engines and crews go cross-country to suppress fires. This would also lead to increased erosion which would plug cattleguards. Estimates are that every fire over 2,000 acres would cause silting or filling of at least one cattleguard. Consequently, the expense of pulling the grids and cleaning them out is another impact.

Alternative 3
In the short-term, the reduced acreage burned would result in more available forage for livestock grazing and fewer livestock would be displaced. Aggressive fire suppression would primarily benefit the winter ranges in A and B polygons by preserving forage on those allotments where the native forage would not regenerate or could not be rehabilitated after a fire.

The fire strategies and tactics used to meet objective levels, may not consider the impact to resources such as soil and vegetation. This lack of concern for the resources could result in increased erosion.

There would be less regard for range improvements. There could be an increase in the demand for water for suppression, resulting in depletion of water sources (ponds, springs, wells, reservoirs) for livestock and other animals. Reservoirs, natural ponds, and wells could be drained due to the demand for water or contaminated by the use of foaming agents in the water. Consequently, impacts would be greatest in summer allotments. Less fences would be burned, but more fences could be damaged due to the suppression strategies used.

Alternative 4
The potential for large-acreage fires would seriously impact livestock grazing. Loss of browse species and sage types, and replacement with cheatgrass and other annuals, on the livestock winter ranges would result in permanent or long-term loss of available winter sheep and cattle forage. Sheep would probably suffer more than the cattle from forage loss, but both classes of livestock depend upon winter forage from browse/shrub forage at certain times during the winter months. Sheep ranges could become useless during the months of December through February because these areas that were once shrub/browse type are now grass type with little protein for the animals during the winter.

The upper elevations in B and C polygons where there are closed stands of juniper would benefit by allowing regrowth of native vegetation. This in turn would result in more available forage for livestock.

Livestock on summer ranges would be at risk from large, uncontrolled wildland fires.

Polygons A and some Bs would need to be rehabilitated to prevent them from becoming perpetual fire sites driven by cheatgrass.

There would be no regard to protecting range improvements. Some consequences include: 1) large fires would burn existing range fences, resulting in a large expense to replace them; 2) livestock control problems would result; and 3) water developments and pipelines could be burned over with large fires. Moreover, post fire impacts would occur in terms of the monies and personnel needed for massive projects to rehabilitate and reseed these burned areas. In addition, more fences and improvements to control livestock to keep them off the rehabilitated or burned areas would be necessary .

Alternative 5
Aggressive suppression in the A and B polygons would result in smaller fires with little loss of salt desert shrub and black sage communities, thereby reducing the invasion of cheatgrass and other annuals. Minimal forage would be lost. The risk to range improvements from fire would be slight, but the suppression tactics would damage fences, water facilities, and cattleguards.

The reverse would occur in the juniper/big sage communities. Polygons B and C would see an increase in the number and size of closed stands. Present understory of vegetation in these communities would give way to climax invasion of woody species, resulting in a loss of available forage. Livestock ranges would become overstocked and need to be reduced in the long-term due to the loss of perennial vegetation on summer grazing ranges.

Containing wildland fires at the target acreage would place a major demand for water that could impact livestock by depleting water sources for livestock and other animals.

The use of dozers and graders, could create serious erosion problems affecting livestock forage and livestock movement.

This alternative could cause livestock users and some publics to be critical of using "Full Suppression" tactics which do not allow fire in polygons B and C.

Vegetation/Fuel Management
A decrease in the loss of winter forage could be accomplished by using reduction strategies in the A and B polygons. By decreasing the loss of forage, less areas are open to invader annual vegetation. The use of green strips, fire tolerant vegetation and fire breaks could reduce the amount of important livestock forage that would be permanently lost of winter ranges.

Under Alternative 2, integrated fire management would allow for more selective burning areas. Better management of burn areas based on controlled burn and fuel reduction would benefit livestock grazing and renew perennial vegetation. Over the long-term, this would be a benefit, but may be a detriment in the short-term, because livestock would need to be kept off the treated areas for at least two years.

The additional acreage completed under vegetation/fuel treatments would allow better selection of areas that would benefit livestock and renew perennial vegetation. This would be a benefit for livestock in the long-term, but may be a detriment in the short-term, because livestock would need to stay off reseeded areas for at least two years.

More improvements, especially fences, would be needed to keep livestock off treated areas. In some instances, livestock would be kept from using an entire allotment that was burned because it would not be feasible to construct a fence to protect the burn.

4.3b Woodland and Vegetative Products

All Alternatives
Wildland fires in juniper types generally leave dead-standing or down remains that would be easily cut and gathered. These areas would be available to the public as long as they are within a designated wood gathering area. Fires or projects outside designated wood gathering areas, in order to be utilized as a gathering area, would require NEPA documentation and formal designation.

Alternative 1
Vegetation/fuel treatment areas could make woodland products more easily gathered.

Commercial seed gatherers for shadscale, winterfat, Gardner saltbush, and prostrate kochia in A polygons would be impacted by wildland fires in their gathering areas approximately every third year and; while those gathering bitterbrush, cliffrose, and rabbitbrush in B and C polygons would be impacted approximately every 5-10 years.

Alternative 2
Less acres would be burned and more acres would be treated than in Alternative 1; as projects are planned and NEPA documentation completed, more areas for green firewood and post cutting may be available for wood gathering.

Generally, the vegetation/fuel treatments would not hinder vegetative seed gathering in A and some B polygons.

Alternative 3
Less acres would be burned and more acres would be treated than in Alternative 2; as projects are planned and NEPA documentation completed, more areas for green firewood and post cutting may be available for wood gathering.

In areas of A and some B polygons, there would be more salt shrub species such as shadscale, Gardner saltbush, winterfat, kochia, and rabbitbrush available than in Alternative 2 to produce seed for commercial seed gatherers.

Alternative 4
There would be more larger areas of dead and downed wood available to the public for gathering.

Due to large areas being burned, there would be less seed collecting areas for commercial gatherers.

Alternative 5
Acreage of dead or downed juniper would be reduced, and may not meet the public's demand for firewood and posts.

More salt desert/semi-desert areas would be available to produce seed, thereby increasing the opportunity for seed harvesting.

4.3c Recreation

Wildland fire of any size or intensity, and recreation of any kind, regardless of the alternative, are not compatible.

Developed Interpretive Sites: The eight sites are located within the confines of parking lots, and are relatively free of fuels that might ignite or carry a fire to on-site improvements.

Recreation Areas: The Bonneville Salt Flats and the Knolls OHV area are located in areas where vegetation is sparse. The other three areas are located in polygons where wildland fires have occurred over the past ten years, with the greatest risk to Horseshoe Knolls.

Developed Campgrounds: All four campgrounds are located in a natural setting, surrounded by fuels of various sizes and densities. Based on fire history, Simpson Springs and Clover Spring campgrounds would have the greatest risk. Fire suppression in the campgrounds would be considered to be a high priority, not only to protect improvements (structures) and the natural landscape, but to provide a BLM presence and assistance to visitors should they require rescue or evacuation.

Dispersed Recreation: Visitors are bound to no particular location and would avoid fire blackened areas, or the relocate to an unburned, more desirable campsite. They would avoid fire or burned areas until a season of new growth has covered the fire scars and stabilized soil and other ecological conditions.

4.3d Wilderness Values

Suppression strategy and tactics would be based on fire severity, and the resources and values present for the area. Under Alternatives 1, 2, 3, and 5, wildland fire suppression operations are not likely to affect the opportunity for Congress to consider the areas for wilderness; in Alternative 4, the minimum suppression may detract from the naturalness of the area and limit wilderness designation. Catastrophic events may require aggressive tactics not normally used in these areas. Refer to Table 4.2 for additional information.

4.3e Cultural/Native American Concerns

Wildland Fire Suppression
Impacts to cultural resources during suppression activities are related to such suppression activities as construction of fire lines and the fire itself. Care should be taken to avoid impacting major cultural resources during suppression activities. Areas of high site densities should be examined following fires to determine if the fire or suppression activities have impacted sites.

Where identified and practical, areas of cultural concern to Native American groups would be protected during suppression activities. Where areas of cultural concern have been impacted by wildland fires, BLM would work with affected parties to mitigate impacts. Specific plans would be developed as part of the environmental process for individual projects.

Vegetation/Fuel Management
Many of the types of treatments listed in Table 2.1d have the potential to impact cultural resources. In order to analyze the impact of vegetation/fuel management on cultural resources, past fire rehabilitation and land treatment projects were examined. These include most of the types of treatments listed in Table 2.1d.

A total of 47 cultural resource inventories have been conducted for emergency fire rehabilitation and land treatment projects between 1977 and 1997. These projects represent a cross section of the lands managed by the District and particularly in areas where fires are likely to occur. The inventories cover slightly less than 39,500 acres or less than 1% of the total acreage managed by the District. A total of 149 sites have been located in these projects.

Approximately 58% of this acreage has been inventoried since 1994. A total of 25 sites or 17% of the 149 sites have been recorded since 1994.

Individual projects range in size from less than 100 acres to 6,000 acres. The number of sites located in this projects range from zero to 64. Since many of the early projects were sample surveys, the actual number of sites in the project could be much higher. Most of the inventories resulted in fewer than 10 sites in any one project.

The average site density in all 47 projects is about 1 site per 265 acres. However, site density varies throughout the District and in individual polygons. For example, under existing conditions, land disturbing vegetation/fuel management projects could potentially impact up to 33 sites in a single year and as many as 300 sites over a ten-year period if the projects were in high site density areas. Yet, in the same polygon, a 6,000 acre inventory did not record any sites.

With this caveat in mind, the 1 site per 265 acres is used to establish the lower limits for the numbers of sites that might be potentially impacted by fuel management projects.

Alternative 1
Between three and six sites could potentially be impacted per year or single project. Over a five-year period as many as 34 sites could be impacted and as many as 53 over a ten-year period.

Alternative 2
Between 10 and 17 sites could potentially be impacted annually. Over a five-year period as many as 90 sites could be impacted and 169 sites over a ten-year period.

Alternative 3
Between 19 and 31 sites could potentially be impacted on annual basis. As many as 198 sites could be impacted over a five-year period and 311 sites over a ten-year period.

4.4 Natural Resources

4.4a Wild Horses

Alternative 1
Wild horses would continue to be displaced when wildland fires burn forage in the herd areas such as the Cedar Mountain Range, Onaqui Mountain Range and the Southern end of the Oquirrhs. Wild horses would continue to

move into areas outside their normal herd area to make up for loss of forage. This presently leads to some horses on private land making it necessary that they be removed. Some horses that are displaced move onto the Dugway Military Range.

Wild horse habitat would continue to be lost at the present rate. Habitat such as juniper cover in the C and B polygons, vegetation on mountain ridge tops in the B and C polygons, and salt desert shrub type in the A polygons.

Additional horse roundups would be needed, especially during years when there are a lot of wildland fires combined with drought.

Alternative 2
Integrated suppression would have about the same impact on wild horses as livestock. Wild horses would be displaced due to burns, especially in A and B polygons. They would have to go elsewhere to obtain feed. There would be less areas burned in the A polygons but more area burned under a controlled basis for fuel reduction and prescribed treatment in polygons B and C.

Prescribed fires in the B and C polygons would have a negative impact for wild horses in their areas for the short-term, but would be a benefit in the long-term. Areas burned in B and C polygons would come back naturally with native vegetation; burned areas that are reseeded would also do well. This would be a benefit for wild horses over the long-term. Once again as with livestock, there may be a need to fence areas and control water to keep wild horses off the burn treated areas as they green up.

Loss of wild horse habitat would be less because prescribed fire planning would be more site selective. Further, fire planning strategies would control wildland fire and enhance controlled burn areas.

Alternative 3
"Full Suppression" of fires would be less impact to wild horses over the short-term because less forage would be burned and fewer horses displaced.

Long-term impacts would be loss of forage for horses and horse habitat. Fewer fires would allow closed stands of climax vegetation, and decadent fuel buildup leading to loss of forage.

Demand for water to suppress fires could compete with water use by horses during the hot summer months. Fires in the White Rock area, for example, would place an increased demand for water on the natural nearby pond that the horses use. Also, water storage tanks used to serve animals in the summer could be drained for fire suppression. It could take some time to restore the water at some of these tanks.

Alternative 4
Wild horses could be greatly displaced with minimum suppression. They would have to find forage and habitat elsewhere, eventually going outside of designated herd areas and perhaps onto private property. This could require additional roundups to gather problem horses outside of their normal area.

Long-term benefits to horses could exist in areas of upper B and C polygons of juniper and sagebrush closed communities, where closed climax vegetation with little understory would be burned and native vegetation could regenerate.

Loss of horse habitat would occur in A and B polygons.

Alternative 5
"Full Suppression" could impact wild horses due to increased fire suppression activity, use of heavy equipment, and possible air suppression. Horses could be forced to move into other areas to avoid fire and suppression activity.

There would be a benefit to wild horses with "Full Suppression" by putting fires out before they could eliminate horse habitat, especially in polygons C and parts of B where important browse species such as Black sagebrush type and mahogany exist.

Long-term impacts could be loss of forage in habitat areas of juniper and Big sagebrush stands due to areas becoming closed climax communities resulting from, and ultimately leading to decadent fuel buildup.

Demand for water to suppress fires would compete with water used by horses during the hot summer months. Fires in the White Rocks area, for example, would place a demand on the pond that the horses depend on for water. Storage tanks would be drained to aid suppression efforts.

4.4b Vegetation

Vegetation impacts may be found under section 4.4d, Wildlife.

♦ Native to non-Native Vegetation Conversion

Wildland Fire Suppression
In many of the desert shrub polygons, most notably polygon A–3, there is a widespread increase in the number of acres being converted from native species that are not very susceptible to stand replacement wildland fires, to the highly volatile introduced exotic annuals (mostly cheatgrass bromus tectorum). Consequently, these converted acreages would be very susceptible to frequent, intense, stand replacement wildland fires.

In the semi–desert and upland vegetation types, many of the polygons contain areas where juniper has successfully invaded into sagebrush and mountain brush communities, as well as areas where juniper stands have crowded out other vegetation. Consequently, there is an increase in the acreage of dense closed canopy juniper stands with little or no vegetation in the understory.

Alternative 1
The increase in acres being converted from native to non–native species and the encroachment of juniper into the sagebrush and mountain brush communities would continue at its present rate and hazardous fuel acreage would also grow at its present rate.

Alternative 2
"Full Suppression" in A and some B polygons would greatly reduce the number of acres being converted and appropriate management response suppression in B and some C polygons which contain some juniper stands would reduce the number of acres with hazardous fuels.

Alternative 3
"Full Suppression" with smaller actual burned acreage, in A and some B polygons would result in less acres being converted than in Alternative 2. More aggressive use of appropriate management response suppression in B and some C polygons which contain some juniper stands would reduce hazardous fuels on more acres than in Alternative 2.

Alternative 4
Limited suppression would result in larger fires in all categories which would greatly increase the conversion rate of acreage to non–native species; however, in the long–term hazardous fuels acreage would balance out as there becomes less and less acreage that has not been affected by fire.

Alternative 5
Aggressive suppression in all categories would reduce the number of acres being converted to non–native species, but, increase the number of acres with hazardous fuels.

Vegetation/Fuel Management
Vegetation/fuel treatment projects, (i.e., greenstripping, fuelbreaks, blackstripping, chaining, herbicides, discing, dozing, plowing, prescribed fire, roller chopping, and thinning), are current methods of manipulating vegetation and hazardous fuels to benefit resources. These treatments would curb the conversion of vegetation types from native species domination to non–native species domination and juniper encroachment. In addition, by changing the fire return interval and vegetation to achieve PNC, fire size, intensity, and complexity would be reduced. Research is continuing to develop new methods of better meeting our resource goals. As this research becomes available it would be incorporated into our vegetation/fuel treatment projects.

Alternative 1
In a ten-year period approximately 13,400 acres of projects would be completed.

Alternative 2
In a ten-year period approximately 44,470 acres of projects would be completed. By increasing the acreage treated three-fold over Alternative 1, the issues of native to non–native conversion, and juniper encroachment would be addressed; in the long term, fire size, intensity, and complexity would be reduced.

Alternative 3
In a ten-year period approximately 80,620 acres of projects would be completed. By increasing the acreage treated six-fold over Alternative 1, the issues of native to non–native conversion, and juniper encroachment would be addressed much more rapidly; theoretically, the time to obtain historical fire size, intensity, and complexity would shorten.

♦ Noxious Weeds

The spread of noxious weeds is a concern following a wildland fire. One primary target species is squarrose knapweed currently located in polygons A-3, B-6, B-7, and C-5. Fire in many infested areas would reduce competition for the weeds, resulting in a denser or larger area of infestation. During fall season fires, the vehicular

equipment could transport the seed to a new location. These impacts could be mitigated by reseeding burned areas, and spraying the vehicles to remove any noxious weed seeds before leaving a known infestation area.

4.4c Riparian

Wildland Fire Suppression
Alternative 1
No negative effect on riparian/wetland habitat would be expected from this alternative when riparian/wetland restrictions identified in section 2.7 during suppression activities are adhered to.

Alternative 2
Wildland fires could be utilized to achieve Properly Functioning Condition (PFC) of riparian/wetland areas. Overstory trees/shrub (i.e., willow, birch, cottonwood, and currant) would be at risk. Reducing the sagebrush or upland type plants in the riparian zone would benefit the system by allowing the conversion to a mesic community type.

Alternative 3
No negative effect would be expected to riparian/wetland habitat from this alternative.

Alternative 4
Increase in fire size could increase pressure on riparian/wetland zones to function properly. Larger percentages of watersheds and riparian zones that are burned would alter the systems ability to control overland and instream flow. The District's fisheries would be at risk of erosion due to depletion of ground cover (willow/birch) and increased stream bank sloughing. Higher fire intensity could reduce the systems ability to regenerate riparian/wetland associated species.

Alternative 5
Direct suppression activities could increase the likelihood of impacting a riparian zone by moving heavy equipment over/through an area.

Vegetation/Fuel Management
Alternative 1
No negative effects to riparian wetland areas are expected, but there would be minimal opportunity to achieve proper condition or function of riparian/wetland areas by fire or other treatments.

Alternative 2
Fire and other management activities could enhance riparian/wetland habitat. Site specific impacts would be analyzed prior to conducting any management activity. Resource condition and function would have a greater opportunity to improve. Riparian/wetland areas would benefit in areas of prescribed fires where size, location and burn intensity are identified and achieved. Higher probability of achieving hazard fuel breaks, mosaic burn pattern and wildlife travel corridors by incorporating the natural riparian/wetland system.

Alternative 3
Riparian/wetland habitat would be enhanced through site specific analysis. There could be a large possibility for enhancing riparian/wetland areas by using prescribed fire or other treatments to improve ecological health and function.

Alternatives 4 and 5
Little opportunity would exist to use fire or other management treatments to achieve riparian/wetland habitat in PFC. Improvements to rangeland health and function would not be achievable..

4.4d Wildlife/Habitat

Wildland Fire Suppression

- Desert/Semi-Desert

The following polygons are included in this type: A-1, A-2, A-3, A-5, A-7, A-15, A-19, A-20, B-2, B-5 (des/semi-des. 30% of total B-5), C-7, and D-2. Total acres of public land within this type is 1,255,618 acres. All acreage figures are estimated 10 year averages, 1987-1996.

For analysis purposes for the sections of Desert/Semi-desert only, the polygons were placed in different fire management zones than those described in Chapter 2, section 2.3. This new arrangement is based on whether or not cheatgrass was a problem in the polygon, and are defined below. In relation to polygon B-5, the total area (212,106 acres) was divided into 30% desert shrub (63,632 acres) and 70% upland (148,474 acres).

Alternative 1
Approximately 16,700 acres of desert and semi-desert shrub communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the desert and semi-desert shrub communities, indicates that the actual acres burned in these areas may be less or far greater than the objective levels (refer to Table 2.3). Combining the figures for FMZ 1, (annual grass with desert shrub, 16,600 acres of land would be burned if objectives are met, and 237,633 projected actual acres); FMZ 2 (desert shrub and perennial grasses, 0 acres burned if objectives are met, with 0 projected actual acres burned); and FMZ 3 (desert/semi-desert shrub, 100 acres burned if objectives are met, with 0 projected actual acres burned). The objective level for acres burned would be 16,700 acres, with the projected actual acres burned approximately 237,633 acres (16,700 acres of 1,255,618 total acres, 1%, if objectives are met, and 237,633 projected actual acres of 1,255,618 acres, or 19% of this habitat type).

Short-term impacts to wildlife species inhabiting these areas would include reduced food and cover availability, displacement leading to increased vulnerability to predation and exposure, and direct mortality to wildlife unable to escape the fires, or locate other suitable habitats. There could be a slight increase in forage availability for the pronghorn during the resprouting of vegetation immediately following a fire.

Long-term impacts to wildlife would include a reduction in wildlife diversity and density in the burned areas. Conversion of desert and semi-desert shrub species to cheatgrass, other annuals, and exotic species, could cause a decline in prey species such as ground squirrels, black-tailed jackrabbits, cottontail rabbits, deer mice, and other small mammals, as well as passerine birds and reptiles. These impacts could then result in a negative affect to the habitat suitability for mammalian predators, as well as raptors. There would be a reduction in forage availability for the pronghorn.

In desert and semi-desert shrub communities within polygons A-3, A-15, A-19, A-20, C-7, and D-2, lands impacted by past fires have converted desert and semi-desert shrub and perennial grasses to less desirable annual and exotic species (including cheatgrass), as well as noxious weeds. Similar impacts would occur as a result of future fires in these areas. In these polygons, wildlife species would be impacted as described above, in both the short and long terms. The more frequent the interval of fire in these areas, the greater the impacts would be and the longer it would take for these areas to reestablish native vegetation species.

Due to invasion of cheatgrass and other annuals and noxious weeds, portions of these burned areas may be permanently altered, and be increasingly vulnerable to fire in the future. This would lead to a more monotypic vegetation community which would not provide habitat requirements for as high a density or diversity of wildlife species as does the natural desert shrub communities.

Historic fire records show that the magnitude of the impacts described would be far greater in Polygon A-3 where 125 fires occurred between 1987 and 1996, with 225,324 acres of land burned. The impacts would occur to a much lesser extent in the other polygons mentioned above, where the invasion of cheatgrass is not as pronounced and acres burned are minimal (refer to Table 2.3).

There would be less impacts in the desert and semi-desert shrub areas where invasion of cheatgrass has not occurred, the native vegetation is in healthy condition, and fine fuels which carry fires are minimal. These areas include polygons A-1, A-2, A-5, A-7, and approximately 30% of B-5. Potential exists in these areas for cheatgrass invasion and fires should be kept at a minimum in these areas.

Cross-country travel by engines during suppression activities may lead to the creation of additional roads around the perimeter of the burn as well as in the interior. These roads would reduce forage and cover for wildlife as well as increase the probability of disturbance from recreationists which would utilize the roads. Impacts associated with the use of dozers would be similar, but to a greater extent. Dozer use could lead to permanent scars on the land and rehabilitation success would be minimal in these areas. Dozer use could lead to the mortality of reptiles, passerine birds, and small mammals during the construction of the fire line.

Through the cross-country use of engines, and use of dozers, fires in these areas would be controlled quicker and fewer acres would be burned. There would be a reduction in the number of acres which would be converted to cheatgrass, other annuals, and noxious weeds. The use of aerial retardant drops would also minimize acres of land burned. Creating fire lines with hand crews would have similar impacts as those described for use of engines and dozers described above, but would be to a lesser extent. Fire lines constructed by hand crews would be slow and acres burned would not be reduced. Use of air tankers, SEAT, heli w/bucket, or back burning where appropriate, would also minimize acres burned, with no major impacts to wildlife and associated habitats.

The positive impacts of reduced acres of desert and semi-desert shrub communities being burned, far outweighs the negative impacts of cross country engine use, as well as dozer use in the A-3, A-15, A-19, A-20, C-7, and D-2 polygons.

Alternative 2
Approximately 14,250 acres of desert and semi-desert shrub communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the desert and semi-desert shrub communities, indicates that the actual acres burned in these areas may be less or far greater than the objective levels (refer to Table 2.3). Combining the figures for FMZ 1, (annual grass with desert shrub, 12,750 acres would be burned if objectives are met, and 182,703 projected actual acres), FMZ 2 (desert shrub and perennial grasses, 0 acres burned if objectives are met, with 0 projected actual acres), and FMZ 3 (desert/semi-desert shrub, 1,500 acres burned if objectives are met, with 2130 projected actual acres). The objective level for acres burned would be 14,250 acres, with the projected actual acres burned approximately 184,833 acres (14,250 acres of 1,255,618 total acres, 1%, if objectives are met, and 184,833 projected actual acres of 1,255,618 acres, or 15% of this habitat type).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, related to desert and semi-desert vegetation communities, but fire impacts would affect 50,800 fewer acres of this habitat.

Alternative 3
Approximately 10,150 acres of desert and semi-desert shrub communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the desert and semi-desert shrub communities, indicates that the actual acres burned in these areas may be less or far greater than the objective levels (refer to Table 2.3). Combining the figures for FMZ 1, (annual grass with desert shrub, 10,050 acres would be burned if objectives are met, and 138,005 projected actual acres), FMZ 2 (desert shrub and perennial grasses, 0 acres burned if objectives are met, with 0 projected actual acres), and FMZ 3 (desert/aemi-desert shrub, 100 acres burned if objectives are met, with 142 projected actual acres). The objective level for acres burned would be 10,150 acres, with the projected actual acres burned approximately 138,147 acres (10,150 acres of 1,255,618 total acres, .8%, if objectives are met, and 138,147 projected actual acres of 1,255,618 acres, or 11%, of this habitat type).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, related to desert and semi-desert vegetation communities, but the impacts would affect 100,486 fewer acres of this habitat.

Alternative 4
Approximately 77,550 acres of desert and semi-desert shrub communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the desert and semi-desert shrub communities, indicates that the actual acres burned in these areas may be less or far greater than the objective levels (refer to Table 2.3). Combining the figures for FMZ 1, (annual grass with desert shrub, 73,050 acres of land would be burned if objectives are met, and 777,325 projected actual acres), FMZ 2 (desert shrub and perennial grasses, 0 acres burned if objectives are met, with 0 projected actual acres), and FMZ 3 (desert/semi-desert shrub, 4,500 acres burned if objectives are met, with 6,390 projected actual acres). The objective level for acres burned would be 77,550 acres, with the projected actual acres burned approximately 783,715 acres (77,550 acres of 1,255,618 total acres, 6%, if objectives are met, and 783,715 projected actual acres of 1,255,618 acres, or 62% of this habitat type).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, related to desert and semi-desert vegetation communities, but the impacts would affect 545,082 acres of additional habitat.

Alternative 5
Approximately 4,400 acres of desert and semi-desert shrub communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the desert and semi-desert shrub communities, indicates that the actual acres burned in these areas may be less or far greater than the objective levels (refer to Table 2.3). Combining the figures for FMZ 1, (annual grass with desert shrub, 4,350 acres of land would be burned if objectives are met, and 62,051 projected actual acres), FMZ 2 (desert shrub and perennial grasses, 0 acres burned if objectives are met, with 0 projected actual acres), and FMZ 3 (desert/semi-desert shrub, 50 acres burned if objectives are met, with 71 projected actual acres), which include the polygons listed above, the objective level for acres burned would be 4,400 acres, with the projected actual acres burned approximately 62,122 acres (4,400 acres of 1,255,618 total acres, .04%, if objectives are met, and 62,122 projected actual acres of 1,255,618 acres, or 5% of this habitat type).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, related to desert and semi-desert vegetation communities, but the impacts would affect 176,511 fewer acres of this habitat.

♦ Upland

Polygons within this type include A-11, A-12, A-13, A-14, A-16, A-17, A-18, B-1, B-4, B-5 (upland, 70% of totalB-5), B-6, B-7, B-8, B-10, B-11, C-3, C-5, C-6, and C-8. Total acres of BLM land in this type is 1,058,765 acres. All acreage figures are estimated 10 year averages, 1987-1996.

Upland areas within FMZ 2, including polygons A-12, A-13, A-17, A-18, B-1, approximately 70% of B-5, B-6, B-8, B-10, B-11, C-6, and C-8. Within FMZ 3 of the upland areas, are polygons A-11, A-14, A-16, B-4, B-7, C-3, and C-5.

Alternative 1
Approximately 62,150 acres of upland vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the upland shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 49,050 acres, and 73,953 projected actual acres burned. Within FMZ 2 upland areas, the objective level for acres burned would be 13,100 acres, and 30,952 projected actual acres. Combining the figures for FMZ 2 and FMZ 3 of the upland areas, there would be a total of 62,150 acres burned if objectives levels are met (62,150 of 1,058,765 acres, 5.9%) and a total of 104,905 projected actual acres burned (104,905 acres of 1,058,765 acres, 9.9%).

Short-term impacts to wildlife would be less forage and cover availability, displacement leading to increased vulnerability to predation and exposure, and direct mortality to wildlife unable to escape the fires. In the long-term in the upper elevations of these units, those areas which burned in small, mosaic patterns, would likely revegetate to natural species and provide habitat diversity, along with increased productivity. The lower elevations of several of these polygons would be vulnerable to invasion of cheatgrass and other annuals, as well as noxious weeds. These include polygons A-4, A-9, A-11, A-12, A-14, A-16, A-17, A-18, B-1, B-2, B-6, B-7, C-3, C-5, C-6, and C-8.

Where larger fires occur, and little cover or protection exists, wildlife would utilize only the outside edges of the burned areas and avoid the inner portions. Where juniper has out competed other vegetation and there is a closed canopy of juniper, these areas when burned, would not reestablish native vegetation and decreased vegetation and wildlife diversity and densities would occur in these areas.

If fires occur in desirable locations, and burn in small, mosaic patterns where edge is maximized, these areas would provide for an increase in wildlife diversity and density.

The impacts of cross-country engine use, and creating fire line with dozers, would be similar to those described for the desert and semi-desert areas described above. Differences would include that there would be a much greater rehabilitation success in these areas and there would be a lesser chance of invasion of cheatgrass, other annuals, and noxious weeds in these areas. The removal of topsoil and piling of rock and other debris would lead to scarring of the land with long-term impacts.

Use of air tankers, SEAT, heli w/bucket, and back burning where appropriate, would reduce total acres burned in the polygons mentioned above where potential exists for the invasion of cheatgrass and other annuals.

Alternative 2
Approximately 24,400 acres of upland vegetation communities on public land impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the upland shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 13,200 acres, and 18,744 projected actual acres. Within FMZ 2 upland areas, the objective level for acres burned would be 11,200 acres, and 21,721 projected actual acres burned. Combining the figures for FMZ 2 and FMZ 3 of the upland areas, there would be a total of 24,400 acres burned if objectives levels are met (24,400 of 1,058,765 acres, 2.3%) and a total of 40,465 projected actual acres burned (40,465 acres of 1,058,765 acres, 3.8%).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, regarding upland areas, but would be a decrease of 37,750 acres of land impacted if objectives are met, and a decrease of 64,440 projected actual acres burned.

Alternative 3
Approximately 27,500 acres of upland vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the upland shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 15,700 acres, and 22,294 projected actual acres. Within FMZ 2 upland areas, the objective level for acres burned would be 11,800 acres, and 23,954 projected actual acres burned. Combining the figures for FMZ 2 and FMZ 3 of the upland areas, there would be a total of 27,500 acres burned if objectives levels are met (27,500 of 1,058,765 acres, 2.6%) and a total of 46,248 projected actual acres burned (46,248 acres of 1,058,765 acres, 4.4%).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, regarding upland areas, with a decrease of 36,450 acres of burn if objectives are met, and a decrease of 58,657 projected actual acres burned.

Alternative 4
Approximately 208,500 acres of upland vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the upland shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 153,900 acres, and 218,538 projected actual acres. Within FMZ 2 upland areas, the objective level for acres burned would be 54,600 acres, and 110,838 projected actual acres burned. Combining the figures for FMZ 2 and FMZ 3 of the upland areas, there would be a total of 208,500 acres burned if objectives levels are met (208,500 of 1,058,765 acres, 20%) and a total of 329,376 projected actual acres burned (329,376 acres of 1,058,765 acres, 31.1%).

Combining the figures for FMZ 2 and FMZ 3 of the upland areas, there would be a total of 208,500 acres burned if objectives levels are met (208,500 of 1,058,765 acres, 20%) and a total of 329,376 projected actual acres burned (329,376 acres of 1,058,765 acres, 31.1%).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, regarding upland areas, with an increase of 146,350 acres of land if objectives are met, and an increase of 224,471 projected actual acres burned.

Alternative 5
Approximately 8,450 acres of upland vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the upland shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 5,450 acres, and 7,739 projected actual acres. Within FMZ 2 upland areas, the objective level for acres burned would be 3,000 acres, and 6,095 projected actual acres burned. Combining the figures for FMZ 2 and FMZ 3 of the upland areas, there would be a total of 8,450 acres burned if objectives levels are met (8,450 of 1,058,765 acres, .8%) and a total of 13,834 projected actual acres burned (13,834 acres of 1,058,765 acres, 1.3%).

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, regarding upland areas, with a decrease of 53,700 acres of land if objectives are met, and a decrease of 91,071 projected actual acres burned.

♦ Mountain

Polygons within this type include A-4, A-8, A-10, B-3, B-9, B-12, C-1, C-2, and C-4. Total acres of public land within this type is 204,878 acres. All acreage figures are estimated 10 year averages, 1987-1996.

Alternative 1
Approximately 8,900 acres of mountain vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the mountain forest and shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels depending on the area (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 8,600, and 11,696 projected actual acres. Within FMZ 2, there would be an additional 300 acres impacted by fire if objectives are met, with no additional projected actual acres. Combining the figures for FMZ 2 and FMZ 3, there would be a total of 8,900 acres of habitat burned (8,900 acres of 204,878 total acres, 4.3%) at objective levels, and 11,696 projected actual acres of habitat burned (11,696 acres of 204,878 total acres, 5.7%).

In FMZ 3, mountain forest and shrub areas (polygons A-4, A-8, A-10, B-3, B-12, C-1, C-2, and C-4), as well as FMZ 2 mountain areas (polygon B-9), short-term impacts to wildlife would be less forage and cover availability, displacement leading to increased vulnerability to predation and exposure, and direct mortality to wildlife unable to escape the fires. In the long-term, those areas which burned in small, mosaic patterns, would likely revegetate to natural species and provide habitat diversity, along with increased productivity.

Where larger fires occur, and little cover or protection exists, wildlife would utilize the outside edges of the burned areas and avoid the inner portions. Where juniper has out competed other vegetation and there is a closed canopy of juniper, these areas when burned would not reestablish native vegetation and decreased vegetation and wildlife diversity and densities would occur in these areas.

If fires occur in desirable locations, and burn in small, mosaic patterns where edge is maximized, these areas would provide for an increase in wildlife diversity and density.

The impacts of cross-country engine use, and creating fire line with dozers, would be similar to those described for the desert and semi-desert areas described above. Differences would include that there would be a much greater rehabilitation success in these areas and there would be little chance of invasion of cheatgrass, other annuals, and

noxious weeds in these areas. The removal of topsoil and piling of rock and other debris would lead to scarring of the land with long-term impacts, however, these areas would eventually revegetate.

Use of air tankers, SEAT, heli w/bucket, and back burning where appropriate, would not have a substantial affects on wildlife or associated habitats. Use of these suppression tactics may reduce acres burned and promote climax vegetation in these areas.

Alternative 2
Approximately 8,400 acres of mountain vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the mountain forest and shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels depending on the area (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 6,900, and 9,798 projected actual acres. Within FMZ 2, there would be an additional 1,500 acres impacted by fire if objectives are met, with 3,045 additional projected actual acres. Combining the figures for FMZ 2 and FMZ 3 for this area, there would be a total of 8,400 acres of habitat burned (8,400 acres of 204,878 total acres, 4.1%) at objective levels, and 12,843 projected actual acres of habitat burned (12,843 acres of 204,878 total acres, 6.3%).

Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with a decrease of 500 acres burned if objectives are met, and an increase of 1,147 projected actual acres.

Alternative 3
Approximately 13,000 acres of mountain vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the mountain forest and shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels depending on the area (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 11,500, and there would be 16,330 projected actual acres. Within FMZ 2, there would be an additional 1,500 acres impacted by fire if objectives are met, with 3,045 additional projected actual acres burned. Combining the figures for FMZ 2 and FMZ 3 for this area, there would be a total of 13,000 acres of habitat burned (13,000 acres of 204,878 total acres, 6.4%) at objective levels, and 19,375 projected actual acres of habitat burned (19,375 acres of 204,878 total acres, 9.5%).

Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with an increase of 4,100 acres burned if objectives are met, and an increase of 4,634 projected actual acres burned.

Alternative 4
Approximately 37,200 acres of mountain vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the mountain forest and shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels depending on the area (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 32,700, and there would be 55,569 projected actual acres. Within FMZ 2, there would be an additional 4,500 acres impacted by fire if objectives are met, with 9,135 additional projected actual acres burned. Combining the figures for FMZ 2 and FMZ 3 for this area, there would be a total of 37,200 acres of habitat burned (37,200 acres of 204,878 total acres, 18.2%) at objective levels, and 55,569 projected actual acres of habitat burned (55,569 acres of 204,878 total acres, 27%).

Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with an increase of 28,300 acres burned if objectives are met, and an increase of 43,873 projected actual acres burned.

Alternative 5
Approximately 2,600 acres of mountain vegetation communities on public land would be impacted by fire, if objective fire suppression goals are met. Historic fire data for the polygons listed above in the mountain forest and shrub communities, indicates that the actual acres burned in these areas may be less or greater than the objective levels depending on the area (refer to Table 2.3). Within FMZ 3, juniper/mountain shrubs with perennial grass, which includes the polygons listed above, the objective level for acres burned would be 2,450, and there would be 3,479 projected actual acres. Within FMZ 2, there would be an additional 150 acres impacted by fire if objectives are met, with 305 additional projected actual acres. Combining the figures for FMZ 2 and FMZ 3 for this area, there would be a total of 2,600 acres of habitat burned (2,600 acres of 204,878 total acres, 1.3%) at objective levels, and 3,784 projected actual acres of habitat burned (3,784 acres of 204,878 total acres, 1.9%).

Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with a decrease of 6,300 acres burned if objectives are met, and a decrease of 7,912 projected actual acres.

♦ Urban/Agriculture Areas

Polygons included in this area include A-6, A-9, and A-21, all within FMZ 2. Total acres of public land in these polygons is 17,785 acres, or .06% of the lands within the District. All acreage figures are estimated 10 year averages, 1987-1996.

Because there are very few acres of public land within these areas, fire size and occurrence is very low, the SLD is not responsible for fire suppression in these areas, and opportunities to manage wildlife resources on these lands low, the impacts to wildlife and associated habitats on these lands would be insignificant.

Alternative 1
Full suppression of wildland fires would occur and 0 acres of land would be impacted by fire if objectives are met, and 561 acres (3.2%) of land impacted by fire at projected actual acres.

Alternative 2
Full suppression of wildland fires would occur and 500 acres (2.8%) of land would be impacted by fire if objectives are met, and 1,015 acres (5.7%) of land impacted by fire at projected actual acres. This would be an increase of 500 acres if objectives are met, and an increase of 554 acres if objectives are met, from Alternative 1.

Alternative 3
Full suppression of wildland fires would occur and there would be little or no acres of land impacted by fire for both the actual and projected actual acres burned. This would be no change if objectives are met, and a decrease of 561 projected actual acres, from Alternative 1.

Alternative 4
Full suppression of wildland fires would occur and 600 acres (3.4%) of land would be impacted by fire if objectives are met, and 1,827 acres (10.3%) of land impacted by fire at projected actual acres. This would be an increase of 600 acres if objectives are met, and an increase of 1,266 acres if objectives are met, from Alternative 1.

Alternative 5
Full suppression of wildland fires would occur and there would be no acres of land impacted by fire if objectives are met, or for projected actual acres. This would be an decrease of 0 acres if objectives are met, and a decrease of 561 acres of projected actual, from Alternative 1.

♦ Wetland Habitats

The only polygon within this habitat type is B-13, FMZ 2, for a total of 56,254 acres of public land. All acreage figures are estimated 10 year averages, 1987-1996.

Alternative 1
There would be 200 acres (.03%) of land impacted by fire if objectives are met, and 511 acres (.09%) of projected actual acres of land impacted. Most of the land impacted would be desert shrub and semi-desert shrub communities around the perimeter of the wetland areas.

These shrub communities would be at risk of converting to cheatgrass and other annual species, and the impacts would be similar to those previously described for these communities.

Alternative 2
There would not be any lands impacted by wildland fire if objectives are met, and little or no projected actual acres of land impacted.

Alternative 3
There would not be any lands impacted by wildland fire if objectives are met, and little or no projected actual acres of land impacted.

Alternative 4
There would be 600 acres of land (400 acres over Alternative 1) impacted by fire if objectives are met, and 1,218 acres of projected actual acres (707 acres over Alternative 1) of land impacted. Most of the land impacted would be desert shrub and semi-desert shrub communities around the perimeter of the wetland areas.

These shrub communities are would be at risk of converting to cheatgrass and other annual species, and the impacts would be similar to those previously described for these communities in Alternative 1.

Alternative 5
There would be 100 acres (.2%) of land (100 acres less than Alternative 1) impacted by fire if objectives are met, and 203 acres (.4%) of projected actual acres (308 acres less than Alternative 1) of land impacted. Most of the land impacted would be desert shrub and semi-desert shrub communities around the perimeter of the wetland areas.

These shrub communities would be at risk of converting to cheatgrass and other annual species, and the impacts would be similar to those previously described for these communities.

♦ Nonflammable Areas, No FMZ

These lands include the mudflats around the Great Salt Lake which have very little or no vegetation and are considered nonflammable. There is only one polygon within this area, D-1, which includes 595,494 acres of public land.

Alternative 1-5
Fire impacts on these lands have been very minimal in the past, and therefore future impacts to wildlife and associated habitats from fire in the future would be insignificant.

Vegetation/Fuel Management
No vegetation treatments are proposed for alternatives 4 and 5, so there would be no impacts to wildlife or associated habitats.

♦ Desert/Semi-Desert

The following polygons are included in this type: A-1, A-2, A-3, A-5, A-7, A-15, A-19, A-20, B-2, B-5 (30%), C-7, and D-2. Total acres of public land within this type is 1,255,618 acres. All acreage figures are estimated 10 year averages, 1987-1996.

Alternative 1
Vegetation treatments in FMZ 1, polygon A-3, would impact up to 9,000 acres (.72%) on a 10 year average.

In areas of desert and semi-desert shrub communities, mechanical/chemical treatments would remove existing native species of plants which would be replaced by cheatgrass, halogeton, and other annual species, including noxious weeds. A trend toward natural revegetation would occur over a 15 to 20 year span, but total recovery of these sites may not be possible. These impacts are much more pronounced in the A-3 polygon, and to a lesser extent in the other polygons listed. Mechanical/chemical treatments in the proper design (long narrow corridors of treated areas), could create fire breaks for natural fires and reduce total number of acres affected by fire and reduce the frequency of fires in these areas.

Short-term impacts from these treatments could cause mortality to wildlife through direct mortality of the animals or destruction of available cover and forage resources. Some displacement of wildlife would also occur.

Long-term impacts from these treatments would be of a positive nature, and would lead to the creation of more diverse and productive areas in relation to both wildlife and plants.

In areas of desert and semi-desert shrub, prescribed fires would remove existing native species of plants which would be replaced by cheatgrass, halogeton, and other annual species, including noxious weeds. Natural revegetation of these treatment areas would be less likely and take longer than through mechanical treatments. These impacts are much more pronounced in the A-3 polygon, and to a lesser extent in the other polygons listed. Prescribed fire in the proper design (long narrow corridors of burned area), could create fire breaks for natural fires and reduce total number of acres affected by fire and reduce the frequency of fires in these areas.

In the short-term there would be a decrease in food and cover availability, displacement of wildlife leading to increased vulnerability to predation and exposure, and direct mortality of wildlife unable to escape the fire, in both the desert/semi-desert vegetation communities as well as the upland and mountain areas.

Alternative 2
This would be a total of 14,000 acres of treatments, or 1.1% of this habitat type, which would be an increase of 5,000 acres from Alternative 1.

Within FMZ 1, polygon A-3, vegetation treatments would impact up to 13,000 acres on a 10 year average, as well as an additional 1,000 acres within FMZ 3, polygon B-2.

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but the impacts would affect up to 2,300 acres of additional habitat.

Alternative 3
Vegetation treatments would impact up to 20,900 acres (1.7%) of public land within FMZ 1, polygons A-1, A-3, and A-15, during a 10 year average. This would be an increase of 11,000 acres from Alternative 1.

Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but the impacts would affect up to 300 acres less of this habitat.

♦ Upland

Polygons within this type include A-11, A-12, A-13, A-14, A-16, A-17, A-18, B-1, B-4, B-5 (70%), B-6, B-7, B-8, B-10, B-11, C-3, C-5, C-6, and C-8. Total acres of BLM land in this type is 1,058,765 acres.

Alternative 1
In FMZ 2 (polygons B-1 and B-6), there would be up to 3,800 acres of vegetation treatments, as well as up to 800 acres of treatments within FMZ 3, polygon C-5. This would be a total of 4,600 acres, or .44% of this habitat type.

Prescribed fire in upland areas have potential to create vegetation diversity and would provide improved habitat in the short-term to species which benefit from increased grasses and forbs, as well as species which benefit from healthy shrub/perennial grass communities, several years later. Fire could destroy existing natural seed sources and reduce the capability of an area to revegetate naturally.

Mechanical/chemical treatments in upland areas have potential to create vegetation diversity and would provide improved habitat in the short-term to species which benefit from increased grasses and forbs, as well as species which benefit from healthy shrub/perennial grass communities several years later.
At this level of vegetation treatments, juniper encroachment would continue at rates faster than what the treatments could control. In the long-term this would lead to a slow trend toward juniper dominated sites with little or no understory of shrubs and grasses, and a reduction in density and diversity of wildlife species. Chaining as a technique to prepare the seed bed, and reverse chaining to cover the seed, has been shown to be an excellent methodology to improve reseeding success.

Wildlife would benefit from the cover provided by the juniper dominated sites, but forage would be reduced, and wildlife diversity decreased.

Alternative 2
This would be a total of 25,130 acres of treatment or 2.4% of this habitat, which would be an increase of 20,530 acres from Alternative 1.

In FMZ 2 (polygons B-1, B-5 (70%), B-6, B-8, B-10, B-11, and C-8), there would be up to 19,880 acres of vegetation treatments, as well as up to 5,250 acres of treatments within FMZ 3, polygons A-11, A-14, B-4, B-7, and C-5.

At this level of prescribed burning and mechanical/chemical treatments, assuming that the burns would be of appropriate size and spacing, and created in mosaic patterns, the treatments would lead to a vegetation community with a balance of trees, shrubs, and grasses that would provide habitat for a high diversity and density of both wildlife and plant species. This treatment level would provide an increase in forage as well as maintain a suitable amount of thermal cover provided by the juniper and pinyon. This would increase suitability of this habitat for mule deer and sage grouse, as well as elk, and a variety of wildlife species which benefit from diverse healthy habitats.

Prescribed fires could also result in smaller wild fires, and major impacts of fire over large numbers of acres could be avoided, and impacts to wildlife reduced.

Alternative 3
In FMZ 2 (polygons A-17, B-1, B-5 (70%), B-6, B-8, B-10, B-11, and C-8), there would be up to 27,480 acres of vegetation treatments, as well as up to 21,900 acres of treatments within FMZ 3, polygons A-11, A-14, A-16, B-4, B-7, and C-5, for a total of 49,380 acres (4.7%) of treatments, which is an increase of 44,780 acres from Alternative 1.

At this level of prescribed burning, juniper encroachment would be greatly reduced. In the long-term, this would lead to a slow trend toward sites dominated by grass, scattered sagebrush, and occasional juniper and pinyon. This would reduce habitat suitability for mule deer and sage grouse, and improve habitat for elk and other wildlife species which inhabit more open areas.

Wildlife would benefit from the cover provided by the juniper dominated sites, but forage would be reduced, and wildlife diversity decreased.

♦ Mountain

Polygons within this type include A-4, A-8, A-10, B-3, B-9, B-12, C-1, C-2, and C-4. Total acres of public land within this type is 204,878 acres. All acreage figures are estimated 10 year averages, 1987-1996.

Alternative 1
There would be up to 400 acres of vegetation treatments within polygon C-4.

Impacts to wildlife and associated habitats would be similar to that described for the upland areas, with an increase in the likelihood of rehabilitation success, and a reduced need to conduct rehabilitation and reseeding in some areas which would recover naturally.

Alternative 2
In FMZ 2 (polygons B-9), there would be up to 720 acres of vegetation treatments, as well as up to 4,600 acres of treatments within FMZ 3, polygons B-3, B-12, C-1, C-2, and C-4. This would be a total of 5,320 acres, or 2.6% of this habitat type, which would be an increase of 4,920 acres from Alternative 1.

Impacts would be the same as described in Alternative 1, but would impact a larger area as described above.

Alternative 3
In FMZ 2 (polygons B-9), there would be up to 720 acres of vegetation treatments, as well as up to 8,200 acres of treatments within FMZ 3, polygons B-3, B-12, C-1, C-2, and C-4. This would be a total of 8,920 acres (4%) of treatments, which would be an increase of 8,520 acres from Alternative 1.

Impacts to wildlife and associated habitats would be the same as described in Alternative 1, but impacts would affect a larger area as described above.

♦ Urban/Agriculture

Polygons included in this area include A-6, A-9, and A-21, all within FMZ 2. Total acres of public land in these polygons is 17,785 acres, or .06% of the lands within the District. All acreage figures are estimated 10 year averages, 1987-1996.

Alternative 1-2
No vegetation treatments are proposed for these areas, therefore there would not be any impacts on wildlife and associated habitats.

Alternative 3
There would be up to 2,000 acres (11.3%) of vegetation treatments in FMZ 2, polygon A-9. This would be an increase of 2,000 acres from Alternative 1.

Impacts to wildlife would be similar to those described for the Desert/Semi-Desert areas addressed in Alternative 1.

♦ Wetlands

The only polygon within this habitat type is B-13, FMZ 2, for a total of 56,254 acres of public land. All acreage figures are estimated 10 year averages, 1987-1996.

Alternative 1
No vegetation treatments are proposed for this area, therefore there would not be any impacts to wildlife and associated habitats.

Alternative 2
There would be up to 420 acres (.75%) of vegetation treatments in FMZ 2, polygon B-13. This would be an increase of 420 acres from Alternative 1.

Vegetation treatments in wetland acres would create open wetland areas, and increase productivity of forage and cover for waterfowl and shorebirds.

Alternative 3
There would be up to 420 acres (.75%) of vegetation treatments in FMZ 2, polygon B-13. This would be an increase of 420 acres from Alternative 1.

Impacts to wildlife would be the same as described in Alternative 2.

♦ Nonflammable Areas, No FMZ

Alternative 1-3
No vegetation treatments are proposed for this area (polygon D-1) therefore there would not be any impacts to wildlife and associated habitats.

4.4e T&E and Utah BLM Sensitive Species

♦ Wildlife/Habitat

There would be a neutral to slight positive impact on those Special Status Species listed in the desert/semi-desert vegetation type through implementation of Alternatives 1, 2, or 3. There would be negative impacts in Alternative 4, and a positive impact in Alternative 5.

There would be a neutral to positive impact to the Special Status Species listed in the Upland vegetation type in Alternatives 1 and 2, positive short-term and negative long-term impacts in Alternative 3, and negative short and long-term impacts in Alternatives 4 and 5.

There would be a neutral to positive impact to those Special Status Species listed for the mountain vegetation types in Alternatives 1, 2, and 3, and negative impacts in Alternatives 4 and 5.

Within the Urban/Agriculture type, there would be little or no change in the impacts to the Special Status Species listed in this type in Alternatives 1, 2, and 3, and slight negative impacts in Alternative 4, and positive impacts in Alternative 5. Due to the small acreage amounts of BLM administered lands in this type, the impacts in all alternatives are insignificant.

There would be a neutral to slight positive impact to Special Status species in the Aquatic Seeps/Wetland types in Alternatives 1, 2, and 3, negative impacts in Alternative 4, and neutral to slightly negative in Alternative 5.

Within the riverine and Lakes/Reservoir types, there would be neutral to positive impacts to Special Status Species in Alternatives 1, 2, and 3, and negative impacts in Alternatives 4 and 5.

In general, Special Status Species within the district would be positively impacted through the management of habitats to create diverse habitats where edge is maximized, large monotypic stands of any given vegetation type minimized, and a diverse and healthy plant composition is maintained to balance the composition of grasses, forbs, shrubs and trees.

♦ Plant Species

Most of the plants listed in Appendix C occur naturally within habitats of rough terrain, or vegetation of scant cover where fire is not common. An exception to this is the location for Astragalus lentiginosus var. Pohlii (Pohl's milkvetch) which has been threatened by wildland fires and cheatgrass expansions within greasewood communities of Skull and Rush Valleys, Tooele County. There would be little to no impact to sensitive species by wildland fire except for Pohl's milkvetch. These greasewood communities occur in Polygons A-3, A-17. And B-6 where, in an average year, 2,483 acres would be affected by wildland fires. The potential could exist for suitable habitat for Pohl's milkvetch, not yet specifically identified, to be burned or damaged The loss of the greasewood community would reduce the moisture, shade, and shelter needed by Pohl's milkvetch.

Wildland Fire Suppression

Alternative 1
Approximately 16 to 20 acres of known Pohl's milkvetch habitat could be burned or damaged by suppression activities annually by wildland fires.

Alternative 2
Approximately 8 to 12 acres of known Pohl's milkvetch habitat could be burned or damaged by suppression activities annually by wildland fires.

Alternative 3
Approximately 12 to 16 acres of known Pohl's milkvetch habitat could be burned or damaged by suppression activities annually by wildland fires.

Alternative 4
Approximately 50 to 80 acres of known Pohl's milkvetch habitat could be burned or damaged by suppression activities annually by wildland fires.

Alternative 5
Approximately 5 to 8 acres of known Pohl's milkvetch habitat could be burned or damaged by suppression activities annually by wildland fires.

4.5 Suppression Costs

Alternative 1
Based on the "current" fire suppression organization and historical suppression efforts , the average annual burn acreage from 1987 to 1996 was approximately 28,250 to 38,850 acres per year on BLM lands. Average annual suppression costs range approximately from $781,000 to $1,074,000 per year. This total cost represents an average per acre cost in the cheatgrass/desert shrub fuel type (FMZ 1) of approximately $8.89 per acre. Costs in the sagebrush fuel type (FMZ 2) average about $71.87 per acre and costs in the juniper/mountain shrub type (FMZ 3) average approximately $67.85 per acre. Generally, suppression costs in lighter fuels (grass, and sagebrush) are less than heavier fuel types (juniper and timber). This difference relates primarily to the faster growth of light fuel fires and the shorter duration of these fires, thus leading to less cost per acre burned.

As noted above, sagebrush (FMZ 2) fires have had a slightly higher costs than the heavier juniper /mountain shrub fuel types. This deviation from the norm is most likely related to some of the historically large juniper fires that exhibited extreme rates of spread during a short time period, thus resulting in more acres burned per dollar expended in suppression than average.

Alternative 2
Per acre suppression costs in FMZ 1 are projected to be about 35% higher than under Alternative 1. The per acre suppression cost for FMZ 2 are expected to be 10% higher than Alternative 1 and FMZ 3 costs are projected to be 50% higher. These increases are due to increased aggressiveness or intensity of fire management for the FMZs response, the increase in size and cost of the initial attack force, and reduced acres burned in proportion to the dollars expended. Therefore, average acre suppression cost in FMZ 1 are projected to be $12.00 per acre. Costs in FMZ 2 are projected to be $79.06 per acre and costs in FMZ 3 are projected to be $101.78 per acre. Based on these costs and the projected annual acres burned for each FMZ the total annual suppression cost is projected to range from $593,500 to $816,000.

Alternative 3
Per acre suppression costs in FMZ 1 are projected to be about 85% higher than under Alternative 1. The increase in FMZ 1 is due to increased aggressiveness in initial attack and reduced acres burned in proportion to the dollars expended. Target acres for FMZ 2 are very similar to Alternative 1, therefore the per acre suppression cost for FMZ 2 are expected to be the same as Alternative 1. Like Alternative 2, this alternative will require more intensive management of fires in FMZ 3 than Alternative 1. In addition, fires in extreme burning conditions will require more aggressive suppression effort to keep them moderate in size, therefore, the average acre costs in FMZ 3 are projected to increase about 40% over Alternative 1. This increase is slightly less than Alternative 2 and is due primarily to the economy of scale associated with burning a few more acres for essentially the same effort expended. Based on these assumptions the average acre suppression cost in FMZ 1 are projected to be $16.45 per acre. Costs in FMZ 2 are projected to be $71.87 per acre and costs in FMZ 3 are projected to be $94.99 per acre. Based on these costs and the projected annual acres burned for each FMZ the total annual suppression cost is projected to range from $632,500 to $869,500.

Alternative 4
Due to the minimal suppression response and the large acreage to be burned, average acre costs would be reduced greatly. Per acre average cost in all fuel types would reduce by approximately 90% from Alternative 1 costs. Per acre suppression costs in FMZ 1 would be $.89 per acre. Costs in FMZ 2 would be $7.19 per acre and costs inFMZ 3 would be $6.79 per acre. Average annual suppression costs in all fuel types is projected to range from approximately $274,500 to $378,000.

These suppression costs do not necessarily reflect the fact that fires may need to be aggressively suppressed due to the threats they present to life, property, and adjacent land ownerships. As discussed in chapter 1, state laws may require suppression of fires that threaten adjacent private and/or state owned lands. In addition, should residences or other improvements on these lands or BLM lands become threatened by these minimally suppressed fires; the cost of then aggressively suppressing these fires to protect the values at risk could easily exceed the total average annual cost of suppression as described above. In the short-term, the likelihood of this situation arising is high due to the current fuel loading, distribution, and structure.

Alternative 5
Based on the projected initial attack fire organization and the aggressive suppression approach, per acre suppression costs are expected to triple in all FMZs. Per acre suppression costs in FMZ 1 is projected to be $26.67 per acre. Costs in FMZ 2 is projected to be $215.61 per acre and the costs in FMZ 3 is projected to be $203.55 per acre. Total average annual suppression costs for all fuel types is projected to range from approximately $437,500 to $602,000.

4.6 Prescribed Fire Costs

Based on average costs, estimates were developed for prescribed fires. They generally include all operational costs, but not planning, clearances, or NEPA compliance.

(1) sagebrush, or sagebrush/grass/juniper complexes	$10-15/acre
(2) Other brush - oak brush	$20-50/acre
(3) Grass	$ 5-12/acre
(4) Juniper slashing	$50-75/acre
Follow-up burning	$10-20/acre

The following items typically lead to higher cost per acre projects: remote areas with increased travel times and higher logistical support costs; significant line construction, areas with few man-made or natural barriers, or "must hold" boundaries such as private property lines, pasture or allotment boundaries; complex projects which require increased staffing; tight prescription parameters, which mean fewer burning opportunities; and contracts for prescribed fire services often cost 25-33% more than in-house projects.

The following items could reduce the acre cost: large projects where there is an efficiency of scale; areas with lots of man-made or natural barriers, varied topography, and different fuel types; and very early or very late season burning since there would be a lower chance for escape.

4.7 Rehabilitation Costs

Based on current seed and contract costs, estimates were developed on rehabilitation by aerial seeding and chaining to cover the seed, and by rangeland drill. In addition, separate costs were developed for using native species versus introduced species. These costs are summarized below, with full breakdown shown in Table 4.1. Refer to Table 4.3 for an estimate of acres by alternative that would be rehabilitatied.

Aerial seed & chaining	
Introduced species	$43.00/acre
Native species	$65.00/acre
Drilling	
Introduced species	$22.00/acre
Native species	$36.00/acre
Fencing (temporary fence)	$3,000/mile

TABLE 4.1
COSTS PER ACRE

TYPE	CONTRACT	ADMIN.	SEED/ PLANTS	VEHICLE EQUIP.	TOTAL
Rangeland Drill					
Introduced	$8.00	$2.00	$11.00	$1.00	$22.00
Native	$8.00	$.22	$25.00	$1.00	$36.00
Aerial & Chaining					
Introduced	$22.00	$2.00	$18.00	$1.00	$43.00
Native	$22.00	$2.00	$40.00	$1.00	$65.00
Aerial Helicopter					
Introduced	$11.00	$2.00	$18.00	$1.00	$32.00
Native	$11.00	$2.00	$40.00	$1.00	$54.00
Aerial Fixed Wing					
Introduced	$5.00	$2.00	$18.00	$1.00	$26.00
Native	$5.00	$2.00	$40.00	$1.00	$48.00
Flame-n-Gos	$1,100/day 20 man crew	$1.00			$5,500/wk
Temporary Electric Fence	Material: $1,500/mi. Installation by contract: $1,500/mi.				$3,000/mi

4.8 Cumulative Impacts

Compliance with NEPA requires analysis of cumulative impacts of each alternative. Cumulative impacts are the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of who has taken those actions. Cumulative impacts would result from individually minor but collectively substantial actions taking place over a period of time.

Past and Present Actions Already Analyzed

Past and present actions have resulted in the affected environment described in Chapter 3. Further, Appendix A describes numerical units called polygons. The polygon narrative describes each area's unique resources, social, political, and geographic characteristics.

Cumulative Impact Assessments

In general, differences in the alternatives relate to the degree of fire suppression strategies used, as well as the number acres involved. Based on the impacts discussed in Chapter 4, the following is an assessment of cumulative impacts by resource:

Safety. The degree of impact to safety varies with each alternative depending on the number and intensity of wildland fires. Cumulatively, the reduction of hazardous fuels in Alternatives 1-3 would reduce catastrophic events, hence, increasing the overall safety to firefighters and public land users.

Physical Environment

Soils. Generally, the most severe erosion occurs within the first year following the soil disturbance. The erosion rate declines over the next 4-5 years, eventually returning to normal. Wildland fire intensities on a small number of wildland fires would degrade the soil through volatilization, delaying the restoration from a few to several years depending on severity. In most cases, however, rehabilitation efforts are fairly successful and would help soils return to their natural productivity and function.

Water yield. Generally, water yield increases slightly for about 30 years, then the natural regeneration would absorb the increase.

Water quality. Generally, water quality in burned areas under all the alternatives would be impacted by an increase in water runoff, loss of topsoil, and an increase in sedimentation of streams where present. The potential for cumulative impacts to water quality would vary based on the number of acreage involved for each alternative.

Air quality. Cumulative impacts to air quality would arise from the interaction of the smoke from a fire and the interacting sources. The cumulative impacts range from short-term visual impairment to long-term air quality. The cumulative impact to this resource would be insignificant in the short-term; however, in the long-term, it could take several decades for management-induced changes in fire regimes to be evident apart from normal season-to-season variation in fire weather conditions.

The potential for cumulative impacts to air quality for areas within the District have been identified in Chapter 3, Section 3.3c.

Moreover, the MOUs discussed in Section 1.5 of Chapter 1 ensure compliance with the Clean Air Act.

Human Uses & Values.

Livestock grazing and Range improvements. The loss of vegetation and its impact on the PNC would impact livestock grazing operations in terms of when and where grazing takes place. Cumulatively, this would impact how range improvements are used for enhancement of forage, as well as for sustaining and improving rangeland health.

Recreation. As mentioned in Chapter 4, wildland fire and recreation, regardless of the alternative are not compatible. Cumulative impacts to open space would primarily affect those who strongly value outdoor recreation experiences. Depending on where wildland fire occurs relative to recreation sites, recreational opportunities and the quality of recreational experiences would diminish. Displacement is likely to occur and lead to increased use in developed recreation sites, dispersed recreation, as well as on non-BLM lands.

Wilderness Values One alternative would not differ from another in terms of impacts to wilderness values and wilderness study areas; these lands would be treated similarly under each alternative. Ecologically, natural ignition fires in these areas could be beneficial. Cumulative impacts to natural landscape character and scenic quality would primarily affect those who strongly value wilderness experiences. There would a reduced number of acres containing hazardous fuels, as well as the opportunity for regeneration toward PNC.

Natural Resources. Cumulative impacts of concern are loss and fragmentation of wildlife habitat, primarily from displacement and loss of habitat value. Probabilities of wildland fire vary with cover type and structural stages and change according to the management prescriptions within each alternative that affect vegetation, composition, and structure. Long-term changes in the habitat could alter the variety and density of wildlife species found on the site.

Fire Suppression Cost. The introduction of exotic annual species would continue to increase under the current FMAP. As the acreage of annuals increases, fires would become more intense and complex, and could cause an increase of catastrophic events. Long-term impacts would continue to have general reduction in rangeland health. Fire regimes would deviate from normal.

Fire Rehabilitation Cost. Over the long-term, noticeable decreases in the acreage burned and associated fire suppression and rehabilitation costs would be decreased as restoration efforts lead to a progressive shift toward less severe fire regimes.

Conclusion. In the long-term, proper fire management practices and natural reintroduction of wildland fire into ecosystems moves towards the natural fire return intervals. Overall, fire could have a positive impact on the health of our public land resources.

TABLE 4.2
COMPARISON OF IMPACTS BY ALTERNATIVES – WILDLAND FIRE SUPPRESSION

ISSUES	ALTERNATIVE 1 NO ACTION		ALTERNATIVE 2 INTEGRATED		ALTERNATIVE 3 MAXIMUM		ALTERNATIVE 4 MINIMUM		ALTERNATIVE 5 AGGRESSIVE	
WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres		acres burned per year 3,750-5,150 acres 19,100-26,250 acres		acres burned per year 4,000-5,500 acres 16,200-22,250 acres		acres burned per year 24,300-33,400 acres 95,590-128,700 acres		acres burned per year 1,240-1,700 acres 6,400-8,800	
❶ SAFETY										
a. Casual Events	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term
(1) Wildland fires escape Initial Attack	Mod	High	Mod	Low	Low	Low	High	High	Low	Mod
(2) Incident complexity rapidly increases	Mod	High	Mod	Mod	Mod	Low	Low	Mod	High	High
(3) Mixed suppression resources (ground & air)	Mod	Mod	Mod	Mod	Mod	Mod	Low	Low	High	High
(4) Multiple jurisdictions involved	Mod	Mod	Mod	Mod	Mod	Low	High	High	High	High
(5) Urban interface	Mod	High	Mod	Mod	Mod	Mod	Mod	High	Mod	High
(6) Increased hazardous fuel loading	Mod	High	Mod	Low	Mod	Low	Mod	High	Mod	High
❷ PHYSICAL ENVIRONMENT										
a. Soils										
(1) Desert & Semi-Desert	• Soil disturbance decreases respectively as suppression becomes more restrictive in these Alternatives.						• Could result in moderate to high soil disturbance.		• Soil disturbance decreases under the "Natural Suppression"	
(2) Upland	• increases the risk of soil disturbance in the old growth juniper, • lengthens the fire return interval, • increases risk of catastrophic events		• In long-term, would reduce the juniper density and allow the understory to return. • Would restore natural fire return intervals, fire intensities would decrease and reduce risk of catastrophic events.				• With little or no vegetation treatment, the soil disturbance would probably be moderate to high.		• increases the risk of soil disturbance in the old growth juniper, • lengthens the fire return interval, • increases risk of catastrophic events	
(3) Mountain	• increases spread and intensity of wildland fire • prolong fire duration • would increase temperature and depth of soil heating, causing volatilization of soil carbon and nutrients • increase greater susceptibility to erosion									

TABLE 4.2
COMPARISON OF IMPACTS BY ALTERNATIVES – WILDLAND FIRE SUPPRESSION

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres	acres burned per year 3,750-5,150 acres 19,100-26,250 acres	acres burned per year 4,000-5,500 acres 16,200-22,250 acres	acres burned per year 24,300-33,400 acres 95,590-128,700 acres	acres burned per year 1,240-1,700 acres 6,400-8,800
b. Water Yield	• Approximately 90,985 acres could provide an increase of about 2% for spring/stream flow. - Desert/semi-desert-11,271 - Upland-71,345 - Mountain-7,863 - Wetland-511	• Approximately 56,094 acres could provide an increase of about 2% for spring/stream flow. - Desert/semi-desert-17,378 - Upland-25,577 - Mountain-11,139 - Wetland-full	• Approximately 59,548 acres could provide an increase of about 2% for spring/stream flow. - Desert/semi-desert-11,378 - Upland-32,345 - Mountain-15,825 - Wetland-full	• Approximately 229,462 acres could provide an increase of about 2% for spring/stream flow. - Desert-semi-desert-34,133 - Upland-219,192 - Mountain-44,919 - Wetland-121	• Approximately 179,644 acres could provide an increase of about 2% for spring/stream flow. - Desert/semi-desert-5,310 - Upland-2,932 - Mountain-9,519 - Wetland--203
c. Water Quality	• 74,850 acres (2.4% of District) of public land impacted by fire if objectives are met, and up to 324,627 projected actual acres (10.2% of District) affected by fire. • Short term impact on all burned areas: -increase in water runoff, loss of topsoil, and an increase in sedimentation of streams where present. • Long term impact: -most of these areas would revegetate, soil erosion and sedimentation would decrease, and the impacts would be reduced.	• 47,550 acres (1.5%) of public land impacted by fire if objectives are met, and up to 247,156 projected actual acres (7.8%) affected by fire. • Compared to Alternative 1: -27,300 acres less impacted by fire if objectives are met; and -77,471 projected actual acres less impacted by fire. • See Alternative 1 for short and long term impacts.	• 50,650 acres (1.6%) of public land impacted by fire if objectives are met, and up to 203,770 projected actual acres (6.4%) affected by fire. • Compared to Alternative 1: -24,200 acres less impacted by fire if objectives are met; and -120,857 projected actual acres less, impacted by fire. • See Alternative 1 for short and long term impacts.	• 324,750 acres (10.2%) of public land impacted by fire if objectives are met, and up to 1,171,705 (36.8%) projected actual acres affected by fire. • Compared to Alternative 1: -An increase of 249,900 acres of additional lands impacted by fire if objectives are met; and -847,078 additional projected actual acres impacted by fire. • See Alternative 1 for short and long term impacts.	• 15,550 acres (.5%) of public land impacted by fire if objectives are met, and up to 79,943 projected actual acres (2.5%) affected by fire. •Compared to Alternative 1: -59,300 acres less impacted by fire if objectives are met; and -244,684 projected actual acres less impacted by fire. • See Alternative 1 for short and long term impacts.
d. Air Quality	914.8-1,258.1 tons/year	618.5-850.0 tons/year	524.6-720.5 tons/year	3,095.4-4,167.6 tons/year	207.2-285.0 tons/year

TABLE 4.2
COMPARISON OF IMPACTS BY ALTERNATIVES – WILDLAND FIRE SUPPRESSION

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres	acres burned per year 3,750-5,150 acres 19,100-26,250 acres	acres burned per year 4,000-5,500 acres 16,200-22,250 acres	acres burned per year 24,300-33,400 acres 95,590-128,700 acres	acres burned per year 1,240-1,700 acres 6,400-8,800
❸ **HUMAN USES AND VALUES**					
a. Livestock Grazing Operations	• Wildland fires in FMZ 1 would result in loss of winter forage for livestock. • Loss of forage would open area to invasion by annual species. • B & C polygons would benefit with regeneration of natural vegetation. • Livestock and personal property at risk from fire. • Range improvements, especially fences, at risk from fire and suppression activities.	• Winter forage loss similar to Alternative 1, but would affect fewer acres. • Danger to livestock would be less that Alternative 1. • Increased suppression would raise risk of erosion from use of old/new roads. • Range improvement risk same as Alternative 1.	• In the short-term, more forage would be available and fewer livestock would be displaced. • Increase in erosion rate resulting from suppression . • Range improvement at greater risk than Alternatives 1 and 2. • Water sources could be depleted.	• Permanent loss of forage for livestock. • Introduced exotic annuals would replace forage in shrub and sage vegetation types. • B and C polygons would have a regrowth of native vegetation, resulting in more available forage. • There would be minimum protection of range improvements: -fences would be burned, resulting in need for replacement and causing livestock control problems. -water facilities would be damaged and/or water source would be depleted..	• Little loss of salt desert shrub and black sage communities, reducing invasion of annuals, • Minimal loss of range improvements from wildland fire; damage by suppression activities may increase. • Loss of forage in juniper and big sagebrush vegetation. Livestock ranges would become overstocked and would need to be reduced. • Water sources for livestock may be depleted by suppression activities. • Increased use of dozers and graders could create serious erosion problems.
b. Woodland and Vegetative Products	• Wildland fires generally leave dead-standing or down remains that would be easily cut and gathered. These areas are available to the public if they are within a designated wood gathering area. Fires, or projects outside designated areas, would require NEPA documentation and formal designation.				
	• Commercial seed gatherers in A polygons would be impacted approximately every third years; in B & C, every 5-10 years.	• Less acres burned and more acres treated than in Alternative 1 could result in more areas identified for green wood cutting.	• Less acres burned and more acres treated than in Alternative 2 could result in more areas identified for green wood cutting. • In A & B polygons, more seed sources would be available for gathering than in Alternative 2.	• Larger areas of dead and downed wood would be available to the public. • Less areas would be available for seed gathering.	• Acreage of dead and downed juniper would be reduced and may not meet the public demand for wood products. • More salt desert/semi-desert areas would be available for seed production and harvesting.
c. Recreation	• Wildland fire of any size or intensity, and recreation of any kind, regardless of the alternative, are not compatible.				

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WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres	acres burned per year 3,750-5,150 acres 19,100-26,250 acres	acres burned per year 4,000-5,500 acres 16,200-22,250 acres	acres burned per year 24,300-33,400 acres 95,590-128,700 acres	acres burned per year 1,240-1,700 acres 6,400-8,800
(1) Interpretation Sites	• All are located within the confines of parking lots, with little fire fuel.				
(2) Developed Recreation	• There would be minimal impact to Bonneville Salt Flats and the Knolls OHV areas. Horseshoe Knolls would have the greatest risk of fire, with moderate risk to the remaining areas.				
(3) Developed Campgrounds	• All campgrounds are located in a natural setting, surrounded by fuels. The greatest risk is to Simpson Springs and Clover Spring campgrounds. Fire suppression would be a high priority.				
(4) Dispersed Recreation Use	• Recreationists would move to unburned locations, avoiding fir or burned areas until a season of new growth has covered the fire scars and stabilized soil and other ecological conditions.				
d. Wilderness Values					
(1) Naturalness	• Overall Low - may vary depending on vegetation type present.			• Moderate to High	• Low
(2) Primitive and Unconfined Recreation	• Impact would only occur during suppression operations.			• Wildland fire and recreation are not compatible.	• Same as Alternatives 1-3.
(3) Solitude	• Impact would only occur during suppression operations.				
(4) Special Features	• Impacts would be dependent on the location of the feature in relation to the wildland fire and intensity				
(5) Congressional Designation	• Low	• Low	• Low	• Moderate	• Low
e. Cultural/Native American Concerns					
(1) Cultural Resources	• Avoid impacting major cultural resources during suppression activities. Areas of high site densities should be examined following fires to determine if the fire or suppression activities have impacted sites.				
(2) Native American Uses	• Continue to provide for the traditional uses and needs of Native Americans.				

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ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres	acres burned per year 3,750-5,150 acres 19,100-26,250 acres	acres burned per year 4,000-5,500 acres 16,200-22,250 acres	acres burned per year 24,300-33,400 acres 95,590-128,700 acres	acres burned per year 1,240-1,700 acres 6,400-8,800
④ NATURAL RESOURCES					
a. Wild Horses	• Fire in herd areas displaces wild horses, moving them to other lands, including private and burns their forage. Additional horse roundups may be needed to remove the horses on private land, and for lack of forage.	• See Alt. 1	• Short-term: -less loss of forage - less displacement. • Long-term: -loss of forage from closed stands of climax vegetation and decadent fuel buildup. -Demand for water to suppress fires could compete with water used by horses.	• Increase displacement of horses outside herd areas. • Increase forage in Cat C & upper B - Juniper stands burned and revegetate with native vegetation.	
b. Vegetation					
(1) Native to non-Native Vegetation Conversion	• Increase of acreage conversion to non-native species and encroachment of juniper would continue. • Hazardous fuel acreage would also continue to grow.	• Increased suppression in A and B polygons would reduce acreage converted to non-native species. • Hazardous fuels in B and C polygons would be reduced.	• Less acreage converted to non-native species than Alternative 2,. • More acres would have hazardous fuel reduced.	• Large fires would incerase conversion rate. • In the long-term, hazardous fuels acreage would balance out as fewer acres remain unaffected by fire.	• Aggressive suppression would reduce conversion to non-native species. • Increase in acreage with hazardous fuels.
(2) Noxious Weeds	Fire could increase density and size of weed infestations by reducing competing native vegetation.				
c. Riparian	• No negative effect to riparian/wetland habitat expected.	• Overstory trees/shrub would be at risk. • Reducing the sagebrush or upland type plants in the riparian zone would benefit the system by allowing the conversion to a mesic community type.	• No negative effect to riparian/wetland habitat expected.	• Larger fire size could increase pressure on riparian/wetland zones to function properly. • Larger percentages of burned watersheds and riparian zones alter the systems ability to control overland and instream flow. • Fisheries at risk of erosion due to depletion of ground cover and increased stream bank sloughing. • Higher fire intensity could reduce the systems ability to regenerate species.	• Direct suppression activities could increase the likelihood of impacting a riparian zone by moving heavy equipment over/through an area.

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ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres	acres burned per year 3,750-5,150 acres 19,100-26,250 acres	acres burned per year 4,000-5,500 acres 16,200-22,250 acres	acres burned per year 24,300-33,400 acres 95,590-128,700 acres	acres burned per year 1,240-1,700 acres 6,400-8,800
d. Wildlife	• All acreage figures are a 10-year average				
(1) Desert/Semi-Desert **The following polygons are included in this type: A-1, A-2, A-3, A-5, A-7, A-15, A-19, A-20, B-2, B-5 (30%), C-7, and D-2.** **Total acres of public land within this type is 1,255,618 acres.**	• Approximately 16,700 acres impacted, if target levels are met. • Short term impacts: -reduced food and cover availability, displacement, and direct mortality to wildlife -slight increase in forage availability immediately following a fire. • Long-term impacts: -Reduced diversity and density in burned areas. -Conversion of desert and semi-desert shrub species to introduced exotic annuals, would cause a decline in prey species, habitat suitability, and forage availability. -Suppression activities could create new roads, reducing forage and cover for wildlife.	• Approximately 14,250 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but fire impacts would affect 52,800 fewer acres of this habitat.	• Approximately 10,150 acres impacted, if target levels are met • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but fire impacts would affect 100,486 fewer acres of this habitat.	• Approximately 77,550 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but fire impacts would affect 545,082 fewer acres of this habitat.	• Approximately 4,400 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but fire impacts would affect 176,511 fewer acres of this habitat.

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ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION **Target Level** **Projected Actual**	**acres burned per year** **7,000-9,650 acres** **28,250-38,850 acres**	**acres burned per year** **3,750-5,150 acres** **19,100-26,250 acres**	**acres burned per year** **4,000-5,500 acres** **16,200-22,250 acres**	**acres burned per year** **24,300-33,400 acres** **95,590-128,700 acres**	**acres burned per year** **1,240-1,700 acres** **6,400-8,800**
(2) Upland **Polygons within this type include A-11, A-12, A-13, A-14, A-16, A-17, A-18, B-1, B-4, B-5 (70%), B-6, B-7, B-8, B-10, B-11, C-3, C-5, C-6, and C-8.** **Total acres of BLM land in this type is 1,058,765 acres**	• Approximately 62,150 acres impacted if target levels are met. • Short term impacts: -less forage and cover availability, displacement, and direct mortality to wildlife. • Long term impacts: -upper elevations would revegetate to natural species and provide habitat diversity, along with increased productivity. -lower elevations would be vulnerable to invasion of introduced exotic annuals. -Suppression activities could create new roads, reducing forage and cover for wildlife.	• Approximately 24,400 acres impacted if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but there would be a **decrease** of 37,750 acres of land impacted if objectives are met, and a **decrease** of 64,440 projected actual acres burned.	• Approximately 27,500 acres impacted if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but there would be a **decrease** of 36,450 acres of land impacted if objectives are met, and a **decrease** of 58,657 projected actual acres burned.	• Approximately 208,500 acres impacted if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but there would be a **increase** of 146,350 acres of land impacted if objectives are met, and a **increase** of 224,471 projected actual acres burned.	• Approximately 8,450 acres impacted if target levels are met. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but there would be a **decrease** of 53,700 acres of land impacted if objectives are met, and a **decrease** of 91,071 projected actual acres burned.
(3) Mountain **Polygons within this type include A-4, A-8, A-10, B-3, B-9, B-12, C-1, C-2, and C-4.** **Total acres of public land within this type is 204,878 acres.**	• Approximately 8,900 acres impacted, if target levels are met. • Short term impacts: -less forage and cover availability, displacement leading to increased vulnerability to predation and exposure, and direct mortality to wildlife unable to escape the fires. • Long term impacts: -those areas which burned in small, mosaic patterns, would likely revegetate to natural species and provide habitat diversity, along with increased productivity.	• Approximately 8,400 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with a decrease of 500 acres burned if objectives are met, and an increase of 1,147 projected actual acres.	• Approximately 13,000 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with a increase of 4,100 acres burned if objectives are met, and an increase of 4,634 projected actual acres.	• Approximately 37,200 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with a increase of 28,300 acres burned if objectives are met, and an increase of 43,873 projected actual acres.	• Approximately 2,600 acres impacted, if target levels are met. • Impacts to wildlife and associated habitats in these areas would be similar to that described for this area in Alternative 1, but with a decrease of 6,300 acres burned if objectives are met, and an increase of 7,912 projected actual acres.

TABLE 4.2
COMPARISON OF IMPACTS BY ALTERNATIVES – WILDLAND FIRE SUPPRESSION

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION **Target Level** **Projected Actual**	**acres burned per year** **7,000-9,650 acres** **28,250-38,850 acres**	**acres burned per year** **3,750-5,150 acres** **19,100-26,250 acres**	**acres burned per year** **4,000-5,500 acres** **16,200-22,250 acres**	**acres burned per year** **24,300-33,400 acres** **95,590-128,700 acres**	**acres burned per year** **1,240-1,700 acres** **6,400-8,800**
(4) Urban/Agriculture Areas **Polygons included in this area include A-6, A-9, and A-21.** **Total acres of public land in these polygons is 17,785 acres.**	• Full suppression of wildland fires would occur and 0 acres of land be impacted by fire if objectives are met, and 561 acres (3.2%) of land impacted by fire at projected actual acres.	• Full suppression of wildland fires would occur and 500 acres (2.8%) of land would be impacted by fire if objectives are met, and 1,015 acres (5.7%) of land impacted by fire at projected actual acres. This would be an increase of 500 acres if objectives are met, and an increase of 554 acres if objectives are met, from Alternative 1.	• Full suppression of wildland fires would occur and there would be little or no acres of land impacted by fire for both the actual and projected actual acres burned. This would be no change if objectives are met, and a decrease of 561 projected actual acres, from Alternative 1.	• Full suppression of wildland fires would occur and 600 acres (3.4%) of land would be impacted by fire if objectives are met, and 1,827 acres (10.3%) of land impacted by fire at projected actual acres. This would be an increase of 600 acres if objectives are met, and an increase of 1,266 acres if objectives are met, from Alternative 1.	• Full suppression of wildland fires would occur and there would be no acres of land impacted by fire if objectives are met, or for projected actual acres. This would be an decrease of 0 acres if objectives are met, and a decrease of 561 acres of projected actual, from Alternative 1.
(5) Wetland Habitats **The only polygon within this habitat type is B-13, FMZ 2, for a total of 56,254 acres of public land.**	• Approximately 200 acres impacted, if target levels are met. Most of the land would be desert shrub and semi-desert shrub communities around the perimeter. • These shrub communities are at risk of converting to introduced exotic annuals and the impacts would be similar to those previously described for these communities.	• There would not be any lands impacted by wildfire if objectives are met, and little or no projected actual acres of land impacted.		• Approximately 600 acres impacted, if target levels are met. Most of the land would be desert shrub and semi-desert shrub communities around the perimeter • These shrub communities are at risk of converting to introduced exotic annuals and the impacts would be similar to those previously described for these communities.	• Approximately 100 acres impacted, if target levels are met. Most of the land would be desert shrub and semi-desert shrub communities around the perimeter • These shrub communities are at risk of converting to introduced exotic annuals and the impacts would be similar to those previously described for these communities.
(6) Nonflammable Areas, No FMZ **There is only one polygon within this area, D-1, which includes 595,494 acres of public land.**	• These lands include the mudflats around the Great Salt Lake which have very little or no vegetation and are considered nonflammable. • Fire impacts on these lands have been very minimal in the past, and therefore future impacts to wildlife and associated habitats from fire in the future would be insignificant.				

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ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
WILDLAND FIRE SUPPRESSION Target Level Projected Actual	acres burned per year 7,000-9,650 acres 28,250-38,850 acres	acres burned per year 3,750-5,150 acres 19,100-26,250 acres	acres burned per year 4,000-5,500 acres 16,200-22,250 acres	acres burned per year 24,300-33,400 acres 95,590-128,700 acres	acres burned per year 1,240-1,700 acres 6,400-8,800
e. T&E and Utah BLM Sensitive Species • **Wildlife/Habitat** **(1) In Desert/semi-desert vegetation type**	• Neutral to slight positive impact.			• Negative impact.	• Positive impact.
(2) In Upland vegetation type	• Neutral to positive impact.		• Positive short term and negative long term impacts.	• Negative short and long term impacts.	
(3) In Mountain vegetation types	• Neutral to positive impact.			• Negative impacts.	
(4) In Urban/Agriculture type	• Little or no change.			• Slight negative impacts.	• Positive impacts.
(5) In Aquatic Seeps/Wetland types	• Neutral to slight positive impact.			• Negative impacts.	• Neutral to slightly negative impacts.
(6) Within the riverine and Lakes/Reservoir types	• Neutral to positive impacts.			• Negative impacts.	
• **Plant Species**	• There is little to no impact to sensitive species by manageable and most unmanageable fire except for Pohl's Milkvetch.				
	• Approximately 16 to 20 acres of Pohl's milkvetch habitat would burn annually.	• Approximately 8 to 12 acres of Pohl's milkvetch habitat would burn annually.	• Approximately 12 to 16 acres of Pohl's milkvetch habitat would burn annually.	• Approximately 50 to 80 acres of Pohl's milkvetch habitat would burn annually.	• Approximately 5 to 8 acres of Pohl's milkvetch habitat would burn annually.

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⑥FIRE SUPPRESSION COST	• Average annual suppression costs range approximately from $781,000 to $1,074,000 per year • Cheatgrass/desert shrub fuel type (FMZ 1) approximately $8.89 per acre. • Sagebrush fuel type (FMZ 2) average about $71.87 per acre • Juniper/mountain shrub type (FMZ 3) average approximately $67.85 per acre. • Generally, suppression costs in lighter fuels (grass, and sagebrush) are less than heavier fuel types (juniper and timber).	• Based on the costs listed below and the projected annual acres burned for each FMZ the total annual suppression cost is projected to range from $593,500 to $816,000. • Per acre suppression costs in FMZ 1 are projected to be about 35% higher. Projected costs to be $12.00 per acre • Per acre suppression cost for FMZ 2 are expected to be 10% higher than alternative 1. Projected costs to be $79.06 per acre. • FMZ 3 costs are projected to be 50% higher. Projected costs to be $101.78 per acre	• Based on the costs listed below and the projected annual acres burned for each FMZ the total annual suppression cost is projected to range from $632,500 to $869,500. • FMZ 1 projected costs to be $16.45 per acre. • FMZ 2 projected costs to be $71.87 per acre. • FMZ 3 projected costs to be $94.99 per acre.	• Based on the costs listed below and the projected annual acres burned for each FMZ the total annual suppression cost is projected to range from $274,500 to $378,000. • Cheatgrass/desert shrub fuel type (FMZ 1)-$.89 per acre. • Sagebrush fuel type (FMZ 2) $7.19 per acre • Juniper/mountain shrub fuel type (FMZ 3) $6.79 per acre.	• Based on the costs listed below and the projected annual acres burned for each FMZ the total annual suppression cost is projected to range from $437,500 to $602,000. • Cheatgrass/desert shrub fuel type (FMZ 1) projected costs to be $26.67 per acre. • Sagebrush fuel type (FMZ 2) projected costs to be $215.61 per acre • Juniper/mountain shrub fuel type (FMZ 3) projected to be $203.55 per acre.
⑥ Prescribed Fire Costs	N/A - See Table 4.3				
⑦ Rehabilitation Costs	• 2,000-5,000 acres seeded, 1/3 by aerial & chaining and 2/3 by drill. - Native/aerial - $50/acre - Introd/aerial - $37/acre - Native/drill - $31/acre - Introd/drill - $21/acre	• 1,500-3,000 acres seeded, 1/3 by aerial & chaining and 2/3 by drill. • Costs per acre would be the same as Alternative 1.	• 1,500-3,000 acres seeded, 1/3 by aerial & chaining and 2/3 by drill. • Costs per acre would be the same as Alternative 1.	• 10,000-15,000 acres seeded, 1/3 by aerial & chaining and 2/3 by drill. • Costs per acre would be the same as Alternative 1.	• 600-1,000 acres seeded, 1/3 by aerial & chaining and 2/3 by drill. • Costs per acre would be the same as Alternative 1.

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES – VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION		ALTERNATIVE 2 INTEGRATED		ALTERNATIVE 3 MAXIMUM		ALTERNATIVE 4 MINIMUM		ALTERNATIVE 5 AGGRESSIVE	
VEGETATION/ FUEL TREATMENT Target Level	900-1,500 acres/year		2,700-4,500 acres/year		4,950-8,300 acres/year		0 acres/year		0 acres/year	
❶ SAFETY										
a. Prescribed Fire Casual Events	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term
(1) Prescribed Fire Complexity	Mod	Mod	High	Mod	High	High	N/A	N/A	N/A	N/A
(2) Increased hazardous fuel loading	Mod	High	Mod	Low	Mod	Low	N/A	N/A	N/A	N/A
b. Mechanical/Chemical Casual Events	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term	Short-Term	Long-Term
(1) Increased hazardous fuel loading	Mod	High	Mod	Low	Mod	Low	Mod	High	N/A	N/A
❷ PHYSICAL ENVIRONMENT										
a. Soils	• Impacts to soils would be similar to those experienced under wildland fire suppression. Refer to Table 4.2 for a summary of the impacts.									
b. Water Quality	• Up to 13,200 acres of public lands where vegetation would be altered through the use of prescribed burning. • Impacts from burns would be similar to those described in Alternative 1, Fire Suppression.		• Up to 44,870 acres (1.4%) of vegetation treatments proposed, which is an increase of 31,670 acres from Alternative 1. • Impacts to water would be similar to those described in Alternative 1, but would impact up to an additional 31,670 acres of land.		• Up to 81,620 acres (2.6%) of vegetation treatments, an increase of 68,420 acres over that for Alternative 1. • Impacts to water resources would be similar to those described in Alternative 1.		• No vegetation treatments are proposed for this alternative, so there would be no impacts to water resources.			
c. Air Quality	29.1-48.6 tons/year		87.4-145.7 tons/year		160.3-268.8 tons/year		N/A		N/A	

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES – VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
VEGETATION/ FUEL TREATMENT Target Level	900-1,500 acres/year	2,700-4,500 acres/year	4,950-8,300 acres/year	0 acres/year	0 acres/year
❸ HUMAN USES AND VALUES					
a. Livestock Grazing Operations	• Treatments such as green stripping and blackstrips would be used on a limited basis.	• Would allow for more selective burning areas. • Better management of burn areas based on controlled burn and fuel reduction would benefit livestock grazing and renew perennial vegetation. • Long-term impact would be a benefit • Short term impact may be a detriment because livestock would need to be kept off the treated areas for at least two years.	• Impacts would be similar to those in Alternative 2, but could involve more acreage.	N/A	N/A
b. Woodland and Vegetative Products	• Treatments could make woodland products more easily gathered.	• Treatments generally would not hinder vegetative seed gathering in A and B polygons.	• Similar to Alternative 2.	N/A	N/A
c. Recreation	• Impacts to recreation would be similar to those experienced under wildland fire suppression. Refer to Table 4.2 for a summary of the impacts.				
d. Wilderness Values	• Impacts to wilderness values would be similar to those experienced under wildland fire suppression. Refer to Table 4.2 for a summary of the impacts.				
e. Cultural/Native America Concerns (1) Cultural Resources	• 3-6 sites potentially impacted per year or single project. • 34 sites potentially impacted-5 year. • 53 sites potentially impacted-10 year.	• 10-17 sites potentially impacted per year or single project. • 90 sites potentially impacted-5 year. • 169 sites potentially impacted-10 year.	• 19-31 sites potentially impacted per year or single project. • 198 sites potentially impacted-5 year. • 311 sites potentially impacted-10 year.	N/A	N/A
(2) Native American Uses	• Continue to provide for the traditional uses and needs of Native Americans.				

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES – VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
VEGETATION/ FUEL TREATMENT Target Level	**900-1,500 acres/year**	**2,700-4,500 acres/year**	**4,950-8,300 acres/year**	**0 acres/year**	**0 acres/year**
❹ NATURAL RESOURCES					
a. Wild Horses	• Impacts to wild horses would be similar to those experienced under wildland fire suppression. Refer to Table 4.2 for a summary of the impacts.				
b. Vegetation					
(1) Native to non-Native Conversion	• Approximately 13,400 acres of projects would be completed over ten years.	• Approximately 44,470 acres of projects would be completed over ten years.	• Approximately 80,620 acres of projects would be completed over ten years.	N/A	N/A
(2) Noxious Weeds	• Impacts to noxious weeds would be similar to those experienced under wildland fire suppression. Refer to Table 4.2 for a summary of the impacts.				
c. Riparian	• No negative effects to riparian/wetland areas expected. • There is minimal opportunity to achieve proper condition or function of riparian/wetland areas by fire or other treatments.	• Fire and other management activities could enhance riparian/wetland habitat. • Resource condition and function would have a greater opportunity to improve. • Riparian/wetland areas would likely benefit in areas of prescribed fires where size, location and burn intensity are identified and achieved. • Higher probability of achieving hazard fuel breaks, mosaic burn pattern and wildlife travel corridors by incorporating the natural riparian/wetland system.	• There is a large possibility for enhancing riparian/wetland areas by using prescribed fire or other treatments to improve ecological health and function.	• Little opportunity to use fire or other management treatments to achieve riparian/wetland habitat in PFC. • Would not achieve improvement of rangeland health and function.	

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES - VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
VEGETATION/ FUEL TREATMENT Target Level	**900-1,500 acres/year**	**2,700-4,500 acres/year**	**4,950-8,300 acres/year**	**0 acres/year**	**0 acres/year**
d. Wildlife	• All acreage figures are for a 10-year average.				
(1) Desert/Semi-Desert **The following polygons are included in this type: A-1, A-2, A-3, A-5, A-7, A-15, A-19, A-20, B-2, B-5 (30%), C-7, and D-2.** **Total acres of public land within this type is 1,255,618 acres.**	• Vegetation treatments in FMZ 1, polygon A-3, would impact up to 9,000 acres (.72%) on a 10 year average. • Existing native species of plants would be replaced by annual species and noxious weeds. • A trend toward natural revegetation would occur over a 15 to 20 year span for mechanical/chemical treatments. Under prescribed fires, recovery would be less likely and take longer. • Proper design (long narrow corridors), could create fire breaks and reduce total number of acres affected and frequency of fires. • Short term impacts: -recued food and cover availability, displacement, and direct mortality to wildlife. -displacement of wildlife . • Long term impacts from these treatments would be positive, and would lead to the creation of more diverse and productive areas in relation to both wildlife and plants.	• A total of 14,000 acres of treatments, or 1.1% of this habitat type; would be an increase of 5,000 acres from Alternative 1. • Within FMZ 1, polygon A-3, vegetation treatments would impact up to 13,000 acres on a 10-year average, as well as an additional 1,000 acres within FMZ 3, polygon B-2. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but the impacts would affect up to 2,300 acres of additional habitat.	• Vegetation treatments would impact up to 20,900 acres (1.7%) of public land within FMZ 1, polygons A-1, A-3, and A-15, during a 10-year average. This would be an increase of 11,000 acres from Alternative 1. • Impacts to wildlife and associated habitats would be similar to those described in Alternative 1, but the impacts would affect up to 300 acres less of this habitat.	N/A	N/A

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES – VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
VEGETATION/ FUEL TREATMENT Target Level	**900-1,500 acres/year**	**2,700-4,500 acres/year**	**4,950-8,300 acres/year**	**0 acres/year**	**0 acres/year**
(2) Upland **Polygons within this type include A-11, A-12, A-13, A-14, A-16, A-17, A-18, B-1, B-4, B-5 (70%), B-6, B-7, B-8, B-10, B-11, C-3, C-5, C-6, and C-8.** **Total acres of BLM land in this type is 1,058,765 acres.**	• A total of 4,600 acres of treatments or .44% of this habitat type. • Could create vegetation diversity and improved habitat in the short-term to species which benefit from increased grasses and forbs, as well as species which benefit from healthy shrub/perennial grass communities. • Fire would destroy existing natural seed sources and reduce the capability of an area to revegetate naturally. • Long term impacts: Juniper encroachment would continue at rates faster than what the treatments could control; leading toward juniper dominated sites with little or no understory, and a reduction in density and diversity of wildlife species. • Wildlife would benefit from the cover provided by the juniper dominated sites, but forage would be reduced, and wildlife diversity decreased.	• Atotal of 25,130 acres of treatment or 2.4% of this habitat, an increase of 20,530 acres from Alternative 1. • Lead to a vegetation community with a balance of trees, shrubs, and grasses, providing habitat for a high diversity and density of both wildlife and plant species. • Would provide an increase of forage as well as maintain a suitable amount of thermal cover provided by the juniper and pinyon. This would increase suitability of this habitat for mule deer and sage grouse, as well as elk, and a variety of wildlife species which benefit from diverse healthy habitats. • Prescribed fires could also result in smaller wild fires, and major impacts of fire over large numbers of acres could be avoided, and impacts to wildlife reduced.	• A total of 49,380 acres (4.7%) of treatments, an increase of 44,780 acres from Alternative 1. • Juniper encroachment would be greatly reduced. • Long term impacts: Reduction of juniper encroachment would lead to a slow trend toward sites dominated by grass, scattered sagebrush, and occasional juniper and pinyon. This would reduce habitat suitability for mule deer and sage grouse, and improve habitat for elk and other wildlife species which inhabit more open areas. • Wildlife would benefit from the cover provided by the juniper dominated sites, but forage would be reduced, and wildlife diversity decreased.	N/A	N/A
(3) Mountain **Polygons within this type include A-4, A-8, A-10, B-3, B-9, B-12, C-1, C-2, and C-4.** **Total acres of public land within this type is 204,878 acres.**	• Up to 400 acres treated within polygon C-4. • Impacts similar to upland areas, with an increase in the likelihood of rehabilitation success, and a reduced need to conduct rehabilitation and reseeding in some areas which would recover naturally.	• A total of 5,320 acres, or 2.6% of this habitat type, which is an increase of 4,920 acres from Alternative 1. • Impacts same as described in Alternative 1, but would impact a larger area as described above.	• A total of 8,920 acres (4%) of treatments, which would be an increase of 8,520 acres from Alternative 1. • Impacts same as described in Alternative 1, but impacts would affect a larger area as described above.	N/A	N/A

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES – VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
VEGETATION/ FUEL TREATMENT Target Level	**900-1,500 acres/year**	**2,700-4,500 acres/year**	**4,950-8,300 acres/year**	**0 acres/year**	**0 acres/year**
(4) Urban/Agriculture Areas **Polygons included in this area include A-6, A-9, and A-21.** **Total acres of public land in these polygons is 17,785 acres.**	• No vegetation treatments are proposed; therefore, there would not be any impacts to wildlife and associated habitats.		• There would be up to 2,000 acres (11.3%) of vegetation treatments. This would be an increase of 2,000 acres from Alternative 1. • Impacts to wildlife would be similar to those described for the Desert/Semi-Desert areas addressed in Alternative 1.	N/A	N/A
(5) Wetland Habitats **The only polygon within this habitat type is B-13, FMZ 2, for a total of 56,254 acres of public land.**	• No vegetation treatments are proposed; therefore, there would not be any impacts to wildlife and associated habitats.	• There would be up to 420 acres (.75%) of vegetation treatments in polygon B-13. This would be an increase of 420 acres from Alternative 1. • Would create open wetland areas, increase productivity of forage and cover.	• There would be up to 420 acres (.75%) of vegetation treatments in polygon B-13. This would be an increase of 420 acres from Alternative 1. • Impacts would be same as Alternative 2.	N/A	N/A
(6) Nonflammable Areas, No FMZ **There is only one polygon within this area, D-1, which includes 595,494 acres of public land.**	• No vegetation treatments are proposed; therefore, there would not be any impacts to wildlife and associated habitats.			N/A	N/A
e. T&E and UTAH BLM SENSITIVE SPECIES **• Wildlife**	• Impacts to T&E and Utah BLM Sensitive Species wildlife species would be similar to those experienced under wildland fire suppression. Refer to Table 4.2 for a summary of the impacts.				
• Plants	• During the initial planning for vegetation/fuel treatments, a review would be made to identify potential habitat for listed species. Any potential habitat would be surveyed to determine if plants are present, and would be adversely impacted by the treatment. If mitigation is not possible, the treatment area should be revised to avoid the plants.				
9 Suppression Cost	N/A - See Table 4.2				

TABLE 4.3
COMPARISON OF IMPACTS BY ALTERNATIVES – VEGETATION/FUEL MANAGEMENT TREATMENTS

ISSUES	ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 INTEGRATED	ALTERNATIVE 3 MAXIMUM	ALTERNATIVE 4 MINIMUM	ALTERNATIVE 5 AGGRESSIVE
VEGETATION/ FUEL TREATMENT Target Level	**900-1,500 acres/year**	**2,700-4,500 acres/year**	**4,950-8,300 acres/year**	**0 acres/year**	**0 acres/year**
❺ Prescribed Fire Costs	• Fire costs range from a low of $5.00/acre for grass type to a high of $75/acre for juniper slashing. Costs could be higher or lower based on location, fire size, varied topography, natural barriers, season of burningand prescription parameters.				
❻ Rehabilitation Cost	600-1000 acres seeded	2,000-3,000 acres seeded	3,000-5,000 acres seeded	N/A	N/A

CHAPTER 5.0 CONSULTATION AND COORDINATION

5.1 LIST OF PREPARERS

The interdisciplinary staff responsibile for the preparation of this EA is as follows:

BUREAU OF LAND MANAGEMENT		
Name	**Title and Office**	**Contributions**
Gary Wieser	Ass't. Field Manager for Support Services, SLD	Project Manager
Dan Washington	Fire Management Specialist, SLD	Team Leader, Writer/Editor
Leon Berggren	Resource Advisor, SLD	Technical Review & External Coordination
Lowell Decker	Natural Resource Specialist, SLD	Rehabilitation
Annettte Delos-Santos	Land Use Planner, SLD	EA & NEPA Compliance Writer/Editor
Kirk Gardner	Wildlife Biologist, SLD	Wildlife, T&E Species, Fisheries, Water, Vegetation, Writer/Editor
Rodd Hardy	Rangeland Management Specialist, SLD	Vegetation, Soil, Water, Sensitive Flora
Gary Kidd	Rangeland Management Specialist, SLD	Range/Grazing
Lew Kirkman	Recreation Specialist, SLD	Recreation, VRM, Wilderness
Jeff Kline	Ass't. Fire Management Officer, SLD	Fire Suppression & Hazardous Fuel Analysis, Air Quality/ Smoke Management, Safety, GIS Polygon Map
Doug Melton	Archaeologist, SLD	Historical and Cultural Resources
Linus Meyer	Rangeland Management Specialist, SLD	Range/Grazing
Sam Montgomery	Ass't. Field Manager for Renewable Resources, SLD	NEPA Analysis Consultant
Britta Nelson	Recreation Specialist, SLD	Recreation
Michael Nelson	Realty Specialist, SLD	Realty
Pam Schuller	Natural Resource Specialist, SLD	Range/Grazing, Riparian
Jeff Scott	Fire Management Officer, SLD	Fire Suppression & Economic Analysis
Alice Stephenson	Environmental Specialist/Planner, SLD	EA & NEPA Compliance Writer/Editor
Jeff Williams	Economist, Utah State Office	Economic and Social Analysis

5.2 List of Agencies and Organizations Contacted

In addition to the public involvement activities described in Chapter 1, the following federal and state agencies and local governments were consulted with during the preparation of this proposed plan. Meetings and briefings were held with:

Tooele County Commissioners
Box Elder County Commissioners
Rich County Commissioners
Governor's Office of Planning and Budget, Resource Development Coordination Committee
Utah Division of Wildlife Resources
U.S. Fish & Wildlife Service
Hill Air Force Base
Wasatch-Cache/Uinta National Forest
Sawtooth National Forest
BLM Upper Snake River District Office, ID
BLM Elko and Ely Resource Areas, NV

5.3 Comments Received During Public Meetings/Open Houses on Proposed Fire Management Plan

Opportunity for comment on issues and concerns relative to the proposed plan was provided to the public. A summary of this participation is provided below:

Commentors	Concern/Comments
State of Utah, Dept. Of Natural Resources, Division of Forestry, Fire, State Lands Dan Ames, Rich County Fire Warden	▷ Area B-10 - If fuel management is desired, some increase in acreage may be warranted. ▷ Area B-11 - prescribed burn area of 280 acres per 10 years seems insignificant. ▷ Area B-9 - if this area is crucial to so many wildlife species, acreages seem sufficient. ▷ B-8 - BLM figures combined with planned private prescriptions would make this a good project area. ▷ Would work with all concerned parties and coordinate efforts.
Anderson, Brian Park Valley, Utah	▷ Burning would help open the large stands of juniper and sage, increasing diversity, water resources, etc. ▷ Recommends burning 20,000 acres instead of 2,000 acres in 10-year period. This should also increase wildlife habitat by increasing the mosaic in large tracts of land.
Gilbert, Eric	▷ Recommends use of land banking (Malpai Borderlands, New Mexico). ▷ Areas that burn should be rested from livestock grazing and livestock operators are allowed to graze on other areas in the "land bank."
Kunzler, Kay Park Valley, Utah	▷ All resource concerns are driven by wildlife. Other concerns should be considered (i.e., increased forage for livestock and reduction of soil erosion). ▷ Economic viability of the communities of Park Valley and Grouse Creek. ▷ Juniper belts in area might benefit from more aggressive prescribed burns, and reduction would benefit wildlife and livestock. ▷ Control of noxious weeds is of great importance. All aspects of fire management plans should be evaluated for their effect on the spread of noxious weeds.
Rich County Commissioners	▷ Wants to see aggressive suppression action, put fires out with minimum acres and cost. ▷ Would also like to see more acreage burned through prescribed fire - felt that by burning there would be less hazardous fuels.
Spencer, Mike Malta, Idaho	▷ The new fire management plan should allow for more area to be burned. ▷ Something needs to be done to improve habitat for both wildlife and cattle.

Commentors	Concern/Comments
State of Utah, Department of Natural Resources, Division of Forestry, Fire and State Lands Barbara Gardner, Area Forester	▷ Supports the safe reintroduction of fire into the ecosystem. Recommends putting the Clover Creek watershed into one polygon instead of splitting into two. ▷ BLM's acreage recommendations for prescribed burns are less than 4% of what is contained in the CRMP. The fire plans for this area should be cooperatively developed and administered. Areas should be set up for limited and or monitor status, not suppression after 300 acres. ▷ To safely reintroduce fire and minimize liabilities all agencies need to work together to protect existing structures and areas. ▷ Division is presently looking into introducing legislation to limit liabilities similar to California and other states. ▷ Lists a few presuppression/prevention projects as opportunities to mitigate fires in the west desert: •Fuelbreak/green belt around Goshute structures •Radio sites/provide clearance for protection •Fuelbreak around other desert communities •Green belts in high cheatgrass areas •Altering grazing practices to reduce fuels ▷ Recommends formation of a Type III Overhead Team (2 hr. response). ▷ Recommend little or no suppression for: Stansbury Island, Cedar Mountains, Lakeside/Silver Mountains, Deep Creek Range, and Clover Creek Rab Areas. ▷ Refers to BLM's questions and answers sheet; National Wildland Fire Review found that due to aggressive fire suppression and other management practices, the landscape has been altered to lend itself to large devastating fires. ▷ Asserts that the plan appears to continue to support aggressive fire fighting that has been ineffective. ▷ Open House meetings held during the holiday month–was not a good time. More creative methods should have been deployed to solicit input from private landowners, lessees, and other stakeholders that use the land. ▷ General comments: •Plan does not appear to meet the goals of reintroducing fire into the ecosystem •Resource values for most areas only identify wildlife and protecting single species; should look at the whole system •Acres proposed for rehabilitation are minimal or inconsequential •Acres proposed for when aggressive suppression occurs is minimal and unrealistic •For rehabilitation burns, it indicates a percentage of the areas being burned with no time frames to accomplish and no time intervals for reburning •There should be more opportunity to allow fire to run its course in certain areas •When does full suppression kick in? •Very little was mentioned on rehabilitation projects and presuppression projects to mitigate fires •What about cost benefit of aggressive suppression vs. resources saved?
State of Utah, Department of Natural Resources, Division of Wildlife Resources Jordan C. Pederson, Regional Supervisor	▷ In general, fire management goals are consistent with habitat requirements for the key wildlife species identified in the "Natural Resources" section of each polygon narrative. ▷ Recommends: 1) an inventory, maintained on a GIS database, to show acreage burned per year for each polygon; and 2) an inventory to assess post-fire, natural recovery potential of sites within each polygon. Those sites without a diverse understory of native or introduced perennial species should be re-seeded to restore wildlife habitat.

Commentors	Concern/Comments
Tooele County Commissioner Teryl Hunsaker, Chairman	▹ Cost benefit ratio - cost of suppression vs. resources at risk. Like to see data supporting aggressive suppression to meet the goals and objectives at minimal cost. ▹ The plan does not coincide with the N.R.C.S. management plan for the Clover Creek Watershed Projects. Would like to see the watershed area treated as one unit by itself as opposed to being two separate units. ▹ Acreage for the aggressive suppression actions are minimal, limited, and unrealistic for Tooele County. ▹ Amount of acres planned for burning seems minor and insignificant, especially when correlated with the aggressive suppression actions listed in the plan. Prescirbed fire outline lacks intervals for reburning and no time to accomplish it. ▹ Plan spends too much time addressing wildlife and not addressing other valuable resources. ▹ Areas that need little, if any fire suppression: Stansbury Island, Cedar Mountains, Lakeside and Silver Mountains, Deep Creek Range, and Clover Creek Watershed Areas. General comments: •When is full fire suppression activated? •Very little was mentioned on rehabilitation projects and presuppression projects to help mitigate fires •Planning areas do not meet objectives for reintroducing fire back into the ecosystem and unnecessary expenditures for suppression •Appears to be primarily an aggressive suppression program district wide •Refers to BLM's questions and answers sheet; National Wildland Fire Review found that due to aggressive fire suppression and other management practices, the landscape has been altered to lend itself to large devastating fires •Appears that the plan supports aggressive fire fighting for goals that are 15 years old and proven ineffective to manage the ecosystem
U.S. Fish and Wildlife Service, Fish Springs National Wildlife Refuge Eric Gilbert, Ass't. Manager	▹ Highlighted the Malpai Borderlands Group newsletter from Arizona. The newsletter references the Maverik Burn which was a second attempt to use prescribed fire to restore vegetation on the Peloncillo Mountains in southern Arizona and New Mexico. ▹ Lessons learned from the first attempt were applied in this second attempt where it was found that costs were cut and fire can be used as a very economical tool. In addition, the project was ecologically beneficial.
U.S. Forest Service, Uinta and Wasatch-Cache National Forests	▹ Categories A, B, C, D represented as only a destructive agent rather than also an ecological one. Fire can be an agent of renewal. ▹ Should include a description of historical vegetation types. How did fire affect certain species before suppression. ▹ Effects of wildland fire described well in categories, but what happens without natural fire or disturbance? ▹ Has increase in woody species because of lack of fire now in some communities contribute to more severe fires such as in units A-9 or A-10? ▹ Are seral stages or disturbance-dependent species declining because of lack of disturbance? ▹ Category B; fire is well represented as a management tool. ▹ Has questions about the percent burned for each unit and how they were derived.
DOI, Fish and Wildlife Service, Utah Field Office Reed E. Harris, Field Supervisor	▹ Enclosed lists of threatened, endangered, and candidate species by county. ▹ Should review proposed action and determine if action would affect any listed species or its critical habitat. Determine if action likely to jeopardize the continued existence of proposed species. ▹ If determination is "may affect" for listed species, you must request in writing formal consultation from the Field Supervisor."

Commentors	Concern/Comments
Utah Wildlife Federation Gerald E. Gordon, Public Lands and Water Issues Coordinator	▷ Public lands in Tooele County will be subject to more frequent use and misuse by interested publics. ▷ Notes that Salt Lake District BLM recognizes habitat for elk, mule, deer, wild horses, bighorn sheep, sage grouse, chukars, and waterfowl. There is need to also recognize habitat for resident antelope, golden eagles, various birds of prey as well as transient bald eagles and other avian species. ▷ Fire management plays a crucial role in maintenance and improvement of wildlife habitat. There is a need for protecting from fire some pinyon pine, juniper, and various sagebrush which is needed for cover and feed. ▷ Strongly suggests that the needs for all resident and transient wildlife species be given priority consideration in the development of the re-treatment plans for burned areas.

GLOSSARY

A

Animal Unit Month (AUM): amount of forage that a cow or five sheep would eat in one month.

Archaeological And Historic Site: a site that contains either objects of antiquity or of cultural value relating to history and/or prehistory that warrant special attention.

Area of Critical Environmental Concern (ACEC): area within public lands that requires special management attention to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; other natural systems or processes; or to protect life or provide safety from natural hazards.

Arid: a term applied to regions or climates where lack of sufficient moisture severely limits growth and production of vegetation. The limits of precipitation vary considerably according to temperature conditions.

C

Chaining: a vegetation removal treatment that utilizes a heavy (40-90 pounds per link) anchor chain pulled behind two crawler-type tractors in a "U" or "J" pattern. The chain may be of various sizes (generally 300-350 feet long) and may weigh up to 32,000 pounds. The width of each swath would vary from 75 feet to 120 feet.

Chemical Treatments: a technique where herbicide chemicals are used to control, suppress, or kill woody tissue above the ground.

Control a Fire: to complete a control line around a fire, any spot fire therefrom, and any interior island to be saved; burn out any unburned area adjacent to the fire side of the control lines, and cool down all hot spots that are immediate threats to the control line, until the lines can reasonably be expected to hold under foreseeable conditions.

D

Direct Attack: any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning fuel from unburned fuel.

Discing: using angled disks or pointed metal-toothed implements to uproot, chop, and mulch nearly all herbaceous vegetation. This technique would be used when complete plant removal or thinning is desired.

Dozing: a crawler-type tractor blade sheers off small brush at ground level. Often topsoil is scraped and removed with the brush and piled into windrows during this operation. (Syn. Blading)

Drilling: a seed-planting operation. The drills are tractor-towed or tractor-mounted implements that consist of a series of furrow openers, seed metering devices, seed hoppers, and seed covering devices. Seed drills are best suited for smooth, well-prepared seedbeds.

E

Ecosystem: an interacting natural system including all the component organisms together with the abiotic environment and processes affecting them.

F

Fire Return Interval: the average time between fires in a given area.

Fire Suppression: all work and activities connected with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

Fire Treatment: the use of fire to accomplish a specified objective.

Fuelbreak: a natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuel Management: act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.

Fuel Treatment: manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling and burning).

Fuel Type: an identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.

Fuel Type Classification: division of wildland areas into fire hazard classes.

Full Suppression: all the work of extinguishing a fire beginning with its discovery, using all available strategies and tactics.

G

Geographic Area: a political boundary d esignated by the wildland fire protection agencies, where these agencies work together in the coordinatin and effec tive utilization of resources within their boundaries. The National Interagency M obilization Guide in Chapter 20, section 21.1, identifies the area encompassed by the eleven NWCG Geogrphic areas.

H

Habitat: the natural abode of a plant or animal, including all biotic, climatic, and soil factors affecting life.

Hazard Reduction: any treatment of living and dead fuels that reduces the threat of ignition and spread of fire.

Herbicide: a chemical used to control, suppress, or kill plants, or to severely interrupt their normal growth processes.

I

Incident: an occurrence, either human caused or natural phenomenon, that requires action or support by emergency service personnel to prevent or minimize loss of life and damage to property and/or natural resources.

Indirect Attack: a method of suppression in which the control line is located some considerable distance away from the fire's active edge. Generally done in the case of a fast-spreading or high-intensity fire and to utilize natural or constructed firebreaks or fuelbreaks and favorable breaks in the topography. The intervening fuel is usually backfired, but occasionally the main fire is allowed to burn to the line, depending on conditions.

Initial Attack: an aggressive suppression action consistent with firefighter and public safety and values to be protected.

M

Modified Suppression: suppression action dictated by one or more management constraints that affect strategy and/or tactics.

Mopup: extinguishing or removing burning material near control lines, felling snags, and trenching logs to prevent rolling after an area has burned, to make a fire safe, or to reduce residual smoke.

N

Natural Suppression: the least aggressive wildland fire suppression strategy, typically allowing the wildland fire to burn itself out within determined natural or existing boundaries such as rocky ridges, streams, and possibly roads.

P

Plowing: an initial treatment to prepare the seedbed that conditions the soil, prevents erosion, or helps moisture retention.

Prescribed Fire: any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescription: measurable criteria which guide selection of appropriate management response and actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social or legal considerations.

R

Resource Suppression: a moderately aggressive wildland fire suppression strategy which can reasonably be expected to keep the fire within established boundaries of constructed firelines under prevailing conditions.

Roller Chopping: a technique that uses the rolling action of heavy bladed drums to cut and crush vegetation up to 5 inches in diameter. The drums are usually pulled by crawler-type tractors.

S

Smoke Management: application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires.

Strategy: the general plan or direction selected to accomplish incident objectives.

Suppression: all the work of extinguishing or confining a fire beginning with its discovery.

T

Thinning: partial removal of vegetation.

Treatment: a procedure whose effect is to be measured and compared with the effect of other procedures. Examples include a fall burned prescribed fire, an unburned "control," or an area burned with a specific ignition method or pattern.

V

Visual Resource Management (VRM): the inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual Resource Management Classes: categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective which prescribes the amount of change allowed in the characteristic landscape.

Visual Resources: the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures and other features.)

W

Wildfire: any unwanted wildland fire.

Wildland Fire: any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildling: young trees and shrubs used for landscaping.

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APPENDIX A FIRE MANAGEMENT PLANNING AREAS (POLYGON DESCRIPTIONS)

Introduction
The purpose of the Phase I Fire Planning is to delineate the District into relatively homogenous management polygons which have definable resource conditions, resource management objectives, and management constraints. These areas were identified on a map, and narrative management guidance was developed for each unit. The district was divided into four fire management categories that define the role and response that wildland fire has in a particular ecosystem. These four fire management categories were labeled "A," "B," "C," and "D." Each of these categories were then subdivided into numerical sub-units (i.e.: A-1, A-5, B-9, etc.) based on each sub-unit's unique resource, social, political, and geographic characteristics. The four main fire management categories ("A," "B," "C," and "D") are defined as follows:

Category "A": Where wildland fire is not desired.

Category "A" is designated for two primary reasons. First, wildland fires in these areas have adverse environmental impacts on the ecosystem. These impacts include such factors as the destruction of crucial wildlife habitat, conversion of native vegetation to exotic plant species, establishment of weed species, increased soil loss, reduced water quality, and damage to cultural and historical resources. The second reason for designating an area as a category "A" is primarily related to social, economic, and/or political concerns and impacts. These impacts include public and fire fighter safety; threats to adjacent communities and property owners; threats to improvements such as residences, communication sites, industrial sites, and range improvements; smoke impacts to communities and airport operations; and disturbance to high use recreation areas.

Category "A" areas are where fire is not a regular, natural part of the ecosystem or where fire has more harmful impacts than benefits to the ecosystem. Fire has generally played a negative role in these areas by altering the native vegetation and allowing introduction of exotic species such as cheatgrass. Introduction of these exotic species has changed the size and interval of fires and has altered the natural species composition of the sites disrupting the natural secession of the native plant communities. As a result, increased size and frequency of fires allows continued and increased disturbance to native plant communities, destroys wildlife habitat, and produces other adverse impacts to the ecosystem. Because the native species generally lack an ability to out compete introduced and exotic species following a fire, rehabilitation projects are required to establish desirable vegetation and prevent soil loss and other undesirable natural consequences. Key examples in the Salt Lake District (SLD) include the salt desert shrub, black sagebrush, and big sagebrush shrub communities.

Prescribed fire for resource management is not recommended nor desired in these units due to fire's adverse environmental impacts. However, prescribed fire may be used to establish fuelbreaks and perform hazardous fuel reduction when the benefits of mitigating the potential for a large spreading fire outweigh the impacts of the fuels management project. In addition, other forms of fuels management designed to protect these fire-sensitive areas are recommended and may include: mechanical manipulation, grazing management, seeding to less flammable and more desirable species, vegetation greenstripping, and other management actions.

Category "B": Where unplanned wildland fire will likely cause negative effects, but these effects may be mitigated through fuels management, prescribed fire, or other strategies.

Unplanned wildland fires in category "B" produce similar adverse and harmful impacts as in category "A." This adverse response to wildland fires is due to a combination of fire sensitivity and abnormal wildland fuels accumulations that produce larger, more severe fires than would normally occur in a healthy ecosystem. Due to this, the primary objective is to limit and suppress wildland fires within these areas. However, category "B" areas may respond positively to properly managed and planned prescribed fires. Unlike category "A" areas, prescribed fire may be used to reintroduce fire into the ecosystem and meet resource management objectives. Small, limited fires can improve vegetation diversity and/or revitalize old decadent plant communities. In addition, prescribed fire is used to reduce hazardous fuel loadings, thus mitigating and reducing the impacts should a wildland fire occur. The key examples in the SLD are those areas where the absence of fires has resulted in replacement of diverse vegetation communities with monotypic stands of less desirable species. These areas include dense stands of juniper or decadent stands of big sagebrush. These plant communities may have little vegetation and age class diversity, resulting in accumulations of hazardous and volatile fuels.

Fuels management is a key to mitigating the negative impacts of unplanned wildland fire in these areas. Fuels management options may include prescribed fire, mechanical manipulation, seeding of less flammable and more desirable species, vegetation greenstripping, and other management strategies.

Category "C": Where wildland fire is desired to manage ecosystems, but there are constraints because of the existing vegetation due to past fire exclusion.

These are areas where wildland fire is a natural part of the ecosystem. The health and diversity of the vegetation, soils and wildlife have evolved and are enhanced or dependent upon the natural consequences of fire. In normal circumstances, the existing native vegetation will naturally revegetate after fire. Key ecosystem examples on the SLD include: juniper with perennial grasslands, aspen groves and big sagebrush with perennial grasses, and other upper elevation plant communities. Although these ecosystems benefit from both unplanned wildland fires and planned prescribed fires, use of either as a management tool may be limited by constraints. These constraints include threats to adjacent developments and residential communities, smoke impacts, lack of manageable fire boundaries, political concerns, and economics of management. Because unplanned wildland fires or wildland fires can be beneficial in these areas, the appropriate fire management response may utilize less aggressive suppression strategies and tactics that result in more acreage burned than under a more aggressive fire suppression response.

Prescribed fire use in these areas is recommended both to meet resource management objectives and as fuels management to mitigate the constraints that may limit using less aggressive suppression in wildland fire situations. Fuels management may be necessary to define more manageable wildland fire boundaries, to protect and minimize the severity and impact of wildland fires on existing plant communities, and to protect values in adjacent units (ie: resource values, developments, etc.). Fuels management activities may involve prescribe fire, mechanical manipulation, fuelbreak development, and other management strategies.

Category "D": Areas where wildland fires may burn without constraints associated with resource conditions, social, economic, or political considerations.

The ecosystem response of these areas are similar to category "C," except there are no constraints to the use of fire. Most often the appropriate fire management response in these areas is to monitor the fire and let the fire play out its natural role in the ecosystem. The key ecosystem example on the SLD for this category is the vegetation communities located in the mudflat areas. Vegetation in these areas is sparse and there is little to no threat to resource values , improvements, or adjacent ownerships. In addition, because of their isolation, social, economic, or political considerations are unlikely to occur.

DEFINITION:
Rangeland condition is determined by comparing the existing plant community with the defined potential natural community (PNC) for a specific ecological site. Seral states (condition classes) are an expression of the relative degree of the kinds, proportions, and amounts that the plants resemble the PNC. Four classes are used to express the degree to which the composition of the present plant community reflects that of the PNC.

Rangeland Condition Class	Percentage of the Present Plant Community
PNC	76-100
Late Seral	51-75
Mid Seral	26-50
Early Seral	0-25

For example, if an area contains 70% of the plants and proportions expected (based on the ecological site description), it would be classified as Late Seral.

A-1 West Ibapah, Elephant Knoll, and Callao Areas:

Ecological Site Description: Annual precipitation averages 4 to 9 inches and slopes are generally 0 to 25 percent. Ecological sites are mainly Desert Alkali Flat, Desert Salty Silt, Playas, Desert Alkali Bottom, Desert Flat, Desert Salt Flat, Desert Gravelly Loam, Semi-Desert Gravelly Loam and Semi-Desert Shallow Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	5%	80%	10%

Vegetation: The dominant vegetation type in this unit is desert shrub characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper trees are very scattered with heavier concentrations at the upper elevations of this unit, and in the area west of Ibapah, juniper and semi-desert species are more prevalent than in the other portions of the unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. This unit represents the most healthy and diverse desert shrub community in the district and has been less impacted by the invasion of cheatgrass. Deep Creek are within this unit and includes riparian species such as carex, sedges, and rushes.

Natural Resources: This unit is used heavily by many raptor species including the ferruginous hawk and burrowing owl, both BLM, Utah, State Sensitive Species. Several nests occur in the unit in scattered juniper trees and on rock outcrops in the area. The range is also used year-round by pronghorn. Some chukar use occurs in the upper elevations of the unit. The kit fox , another species of concern in the district, inhabits this area. Deep Creek provides a ribbon of riparian habitat which is important to a variety of wildlife species.

Dwarf penstemon (Penstemon nanus) and Great Basin Fishhook cactus (Sclerocactus pubispinus) are BLM, Utah, State Sensitive plant species which occur in this unit. Another species of concern is the sagebrush cholla (Opuntia pulchella) which is also endemic to this portion of the Great Basin. The area west of Ibapah contains a few semi-arid herbaceous species that are common to Nevada, but uncommon in Utah.

Recreation: General, dispersed recreation occurs in most of this area, with increased use along the Pony Express/Overland Stage Route which has been designated as the Pony Express Trail National Back Country Byway.

Livestock Grazing: This area is grazed by sheep and cattle November 1 thru April 30.

Historic/Cultural Resources: Cultural resource concerns for this area include the Pony Express/Overland Stage Route and associated stations and monuments. Canyon Station, near the mouth of Overland Canyon, is an interpreted Pony Express Station. There are also isolated historic structures on BLM and adjacent private lands. The transition between the mudflats and the benches around the Deep Creek Mountains often contain prehistoric sites.

Urban Interface/Developments: Isolated ranches exist in the unit, and the unit also borders the town of Callao. A few rangeland improvements occur in the area.

Land Status: The majority of this area is BLM administered land (211,087 acres, or 86.1%) with scattered sections of State School Trust Lands. Private lands are associated with the scattered ranches in the valleys.

Access: Access, both on and off-road, is generally good.

Fire Suppression Hazards: A few mines exist in the unit. The unit is located on the west border of the South Utah Test and Training Range.

Fire Behavior: Wildland fire behavior in this vegetation type is best predicted by Fuel Model 2. The primary carrier of fire in this fuel type is an understory of grass and litter where desert shrub is dominant. In some areas, where brush is less dominant and during moist years when grass growth is good, Fuel Model 1 may be a better predictor of wildland fire behavior. Rates of spread in these lighter fuel types are moderate to high depending on burning conditions. Although fire occurrence in this unit is relatively low, potential exists for large, severe fires that could damage the desert shrub vegetation type in this unit.

A-2 Silver Island Mountains and Floating Island:

Ecological Site Description: Annual precipitation averages 4 to 12 inches and slopes are generally 10 to 75 percent. Ecological sites are mainly Desert Alkali Flat, Desert Salty Silt, Playas, Desert Olitic Dunes, Desert Alkali Bottom, Desert Flat, Desert Alkali Bench, Desert Salt Flat, Desert Loam, Desert Gravelly Loam, Semi-Desert Gravelly Loam, Semi-Desert Shallow Loam and Upland Gravelly Loam, and Upland Shallow Hardpan.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	20%	55%	15%

Vegetation: The dominant vegetation type in the low elevations of this unit is desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper trees are very scattered with heavier concentrations at the upper elevations of this polygon. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one species. This unit represents a healthy and diverse desert shrub community and has been less impacted by the invasion of cheatgrass. The primary vegetation of the upper elevations of this unit is juniper mixed with mountain mahogany, big sagebrush, black sagebrush, and cliffrose, with an understory of bluebunch wheatgrass, and Salina wildrye.

Natural Resources: This unit includes lands that have been proposed for wilderness designation by special interest groups.

A small population of pronghorn inhabit the unit. The area has potential for reintroduction of bighorn sheep. Chukar use occurs throughout the unit. Several raptor species also inhabit the unit with most nests being located on ledges and rock outcrops. BLM, Utah, State Sensitive Species include the ferruginous hawk and burrowing owl. The kit fox, also a species of concern, inhabits portions of this unit.

The only BLM, Utah, State Sensitive plant species which occurs in the unit is the Great Basin fishhook cactus (Sclerocactus pubispinus). The outlier species Anderson wolfberry (Lycium andersonii) is a unique species which occurs in the southern portion of the Silver Island Mountains.

Recreation: General, dispersed recreation occurs in this area. The unit includes 54 miles of the Silver Island Mountains National Back Country Byway.

Livestock Grazing: This area is grazed by cattle from May 10 through March 31, and by sheep in the winter and spring, November 1 through May 10.

Historic/Cultural Resources: The Silver Island Mountains and surrounding areas, contain many significant prehistoric sites. Danger Cave on nearby state lands, is a World Heritage Site. Historic mining activity is present in the Silver Islands and on Crater Island. The Hastings Cutoff passes through Donner-Reed Pass near the north end of this unit.

The area to the south and west of the Silver Island Range contains sites, including targets, related to World War II era training at the Wendover Air Base.

Urban Interface/Developments: A few range improvements exist in the unit. Other structures in the unit are related to mining activities. There are no areas where human habitation occurs in this unit. The southwest portion of this unit borders the city of Wendover. There are several communication sites on Wendover peak related to the military and AT&T.

Land Status: The majority of this unit consists of BLM administered lands (97,530 acres, 86.1%), with a few sections of State School Trust Lands and small scattered parcels of private land associated with mining, as well as larger areas of private land in the Wendover area .

Access: On and off road access is good in the lower elevations of this unit. Few roads access the interior of this unit. The upper elevations of this unit are inaccessible by vehicle and suppression resources are limited to hand crews and aerial resources.

Fire Suppression Hazards: Hazards include open mine shafts, steep, rugged terrain, and possible military ordnance.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 2. The primary carrier of fire in this fuel type is an understory of grass and litter where desert shrub is dominant. Rates of spread in the unit are low to moderate, depending on fine fuel loadings. Fire occurrence is low. Lightning is the main source of ignition.

A-3 Skull Valley and Puddle Valley Areas:

Ecological Site Description: Annual precipitation averages 4 to 10 inches and slopes are generally 0 to 25 percent. Ecological sites are mainly Desert Alkali Flat, Desert Salty Silt, Playas, Desert Loam, Desert Alkali Bottom, Desert Flat, Desert Salt Flat, Desert Gravelly Loam, Semi-Desert Gravelly Loam, and Semi-Desert Shallow Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
45%	20%	20%	15%

Vegetation: The dominant vegetation type in this unit is desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper trees are very scattered with heavier concentrations at the upper elevations of this polygon. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. This unit has been impacted by large and numerous fires in the past and has many areas dominated by cheatgrass.

Natural Resources: West of the Lakeside Mountains, and north of the Riverbed Area in southern Skull Valley, the desert shrub communities are crucial year-round pronghorn range and fawning areas. The upper elevations of this unit are mule deer winter range. Portions of this unit have high chukar use. This is a high use area for raptors and this unit has the highest concentration of ferruginous hawk (BLM, Utah, State Sensitive Species) nests within the Salt Lake District. The Skull Valley portion of this unit is used by wintering bald eagles, an endangered species, for foraging and roosting. The kit fox, another species of concern, also inhabits this area.

Pohl's milkvetch (Astragalus lentiginosus var. pohlii) is located in the mixed basin big sagebrush/greasewood community in Skull Valley.

Wild horses utilize portions of this unit in the area around the Cedar Mountains.

Recreation: General, dispersed recreation occurs in this area. More concentrated recreation occurs along the Pony Express/Overland Stage Route, designated as the Pony Express Trail National Back Country Byway, Horseshoe Springs Watchable Wildlife Area, and the Simpson Springs Campground.

Livestock Grazing: Cattle winter use occurs in this area from November 1 to May 15, and sheep use occurs November 1 through April 30.

Historic/Cultural Resources: Cultural resource concerns for this unit include the Hastings Cutoff, the Lincoln Highway, and the Pony Express/Overland Stage Route.

This includes the station sites of Simpson Springs and Old Riverbed, and the Transcontinental Telegraph Station on Government Creek. Historic areas on adjacent private land such as Iosepa are also of concern. Both isolated and concentrated prehistoric sites occur in the unit. Site densities are variable in this unit, which allows for less than intensive inventories to be conducted in many areas.

Urban Interface/Developments: Several isolated ranches are found in this unit, with the predominance of rural/urban development in the community of Terra and on the Skull Valley Goshute Indian Reservation. In addition, several other significant industrial sites exist within, or adjacent to, the unit, including: Dugway Proving Grounds, Tekoi rocket test facility, hazardous waste incinerators, and Marblehead Quarry facilities. Other improvements in this unit include pasture and allotment fences, guzzlers, communication sites, power lines, Simpson Springs Campground, and various ranches and associated improvements.

Land Status: The majority of this unit consists of BLM administered lands (611,943 acres, 81.2%) with a few sections of State School Trust Lands and small scattered parcels of private land. Private lands account for a higher percent of the lands in those areas described in the Urban Interface section above.

Access: On and off road access is good throughout the unit on BLM administered lands. Access could be a problem on some of the private, Indian Reservation, and Military lands within, or adjacent to, the unit.

Fire Suppression Hazards: Hazards include power lines and the hazardous waste incinerators to the west of the Cedar Mountains and Grayback Hills. There is also potential for unexploded ordnance to exist near the border of Dugway Proving Grounds and the South Test and Training Range. This is especially true in the area around Knolls. In these areas travel is restricted to existing roads.

Fire Behavior: Wildland fire behavior in this vegetation type is best predicted by Fuel Model 1. In some small areas of concentrated desert shrub species Fuel Model 2 may be a better predictor of wildland fire behavior. Rates of spread in these lighter fuel types are moderate to extreme, depending burning conditions. Due to the predominance of lightning and the volatile fuel types, this unit has some of the highest fire occurrence on the Salt Lake District. In addition to lightning, human-caused fires are common as well. The high rates of spread in these fuel types make fires of more than 1,000 acres common, and during extreme burning conditions, fires in excess of 5,000 acres are possible. The district's largest fire occurred in this unit in 1983, and was in excess of 200,000 acres.

A-4 Morrison (Donner) Creek and Bettridge Creek Areas:

Ecological Site Description: Annual precipitation averages 12 to 18 inches and slopes are generally 5 to 80 percent. Ecological sites are mainly Mountain Shallow Loam, Mountain Stony Loam, Upland Shallow Loam, Upland Stony Loam, Wetland Fresh Streambank, and Rock Outcrop.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	10%	50%	30%

Vegetation: Vegetation in this area consists of trees such as Douglas fir, mountain mahogany, pinyon, juniper, quaking aspen, blue elderberry, and river birch. Shrubs include big sagebrush, black sagebrush, rabbitbrush, and snakeweed. Grasses include bluebunch wheatgrass, bluegrass, and cheatgrass. Desert and semi-desert species occur in the low elevations of the unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit includes lands that have been proposed for wilderness designation by special interest groups.

This area is included in the Donner/Bettridge Creeks Area of Critical Environmental Concern (ACEC). Each of the streams provide habitat for the threatened Lahontan cutthroat trout. This area is also utilized by mule deer, elk, pronghorn (lower elevations), and Rocky Mountain bighorn sheep. Blue grouse, sage grouse, chukar and Hungarian partridge also inhabit the area. This area serves as the watershed for the City of Wendover.

Recreation: General, dispersed recreation occurs in this area through most of the year with increased use in the fall related to the various hunting seasons.

Livestock Grazing: Cattle grazing within the lower elevations of this unit, can occur anytime between May 10 and March 31. Cattle grazing usually begins in late August and continues through March. Other than the lower elevations of this unit, cattle grazing is excluded.

Historic/Cultural Resources: This unit includes several recorded prehistoric sites. It is likely that additional prehistoric sites exist within this unit.

Urban Interface/Developments: No major improvements exist in the unit, however protection of adjacent private and state land is a concern. There are developed private properties located to the west, in Nevada, on the Elko District. The Doudy Ranch, located just east of the unit, is the only residence in the area. There is a lodgepole fence exclosure at the lower elevations of Bettridge Creek.

Land Status: The majority of the area is administered by BLM (1,168 acres, 52.3%). There is a State School Trust Lands section in the Bettridge Creek watershed, and the Doudy Ranch and associated private land on the east border of this unit.

Access: Access is limited to two roads which lead to the mouth of Morrison Canyon and a single road which leads approximately .5 miles into the Bettridge Creek Canyon. The north road into Morrison Canyon requires going through the Doudy property which has a locked gate.

Fire Suppression Hazards: Steep, rocky, terrain and forested areas are hazards in this unit.

Fire Behavior: Wildland fire behavior within this unit, where there is a Douglas-fir/quaking aspen association, is best predicted by Fuel Model 8. Areas dominated by pinyon/juniper are best predicted with Fuel Model 6. Typically, rates of spread in these fuels are low to moderate with low intensity, although fire may encounter occasional concentrations of fuels that can flare up. Fire occurrence in this unit is low. Lightning is the dominant cause of fires.

A-5 Lucin to Red Dome Area:

Ecological Site Description: Annual precipitation averages 5 to 9 inches and slopes are generally 0 to 25 percent. Major ecological sites are Alkali Bottom, Alkali Flat, Desert Alkali Bench, Desert Loam, Desert Oalitic Dunes, Desert Flat, Mud Flat, Bare, Semi-Desert Shallow Loam, Semi-Desert Shallow Hardpan, Semi-Desert Loam and Wet Saline Meadow.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
20%	30%	50%	0%

Vegetation: The dominant vegetation type in this unit is desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, needle-and-thread grass, squirreltail, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper trees are very scattered within this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: Mule deer utilize portions of this unit in severe winters. This area is year round habitat for pronghorn. There is high chukar use in the rocky hills of the unit. Ferruginous and Swainson's hawks, and the burrowing owl, all BLM, Utah, State Sensitive Species, are common nesters in this unit along with other raptors. The endangered bald eagle makes significant use of this area in the winter, with Owl Springs area providing several important roost sites. The kit fox is a species of concern which inhabits this area. The area in and around the abandoned community of Lucin provides habitat for numerous species of passerine birds as well as the Least chub, a BLM, Utah, State Sensitive Species.

Recreation: General, dispersed recreation occurs in most of this unit with higher recreation use in the Rabbit Springs area and along the Central Pacific Railroad Grade which has been designated the Transcontinental Railroad National Back Country Byway.

Livestock Grazing: This unit is grazed almost year round by cattle (May 16 through April 30), by sheep November 1 through April 27, and by horses November 1 through April 30.

Historic/Cultural Resources: Cultural resource concerns for this unit include the Central Pacific Transcontinental Railroad Grade (Area of Critical Environmental Concern) and associated sites and clusters of prehistoric sites near springs. The Bidwell-Bartleson Trail passes through a portion of this unit. Protection concerns include the wood trestles and culverts, sidings, and stations along the railroad grade.

Urban Interface/Developments: There are a few isolated ranches within the unit. The Rabbit Springs BLM Field Camp is within this unit. A few range improvement projects exist in the unit such as guzzlers, troughs, pipelines, and fencing, as well as structures related to the railroad. Regeneration stations associated with the fiber optics line exist across the unit.

Land Status: Checkerboard landownership is prevalent throughout the unit, with BLM (206,739 acres, 44.1%), State School Trust Lands, and private lands.

Access: Access is good throughout the unit both on and off road.

Fire Suppression Hazards: No hazards have been identified for this unit.

Fire Behavior: Since this area is dominated by desert shrubs and scattered juniper, fire is typically spread through an understory of grass and annual forbs. Wildland fire behavior within this unit is best predicted by Fuel Model 2. Rates of spread in these fuels are moderate. Fire occurrence in this unit is low. Lightning is the dominant cause of fires, but historically human-caused fires have occurred.

A-6 Bear River Drainage, Wyoming state line to Bear River Bird Refuge Area:

Ecological Site Description: Annual precipitation averages 7 to 9 inches and slopes are generally 5 to 30 percent. Major ecological sites are Desert and Semi-Desert Shallow Loam, Gravelly Loam, Alkali Bench, Loam, Alkali Loam, Wet Saline Streambank, Semi-Wet Fresh Meadow, and Wet Fresh Streambank.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	10%	30%	50%

Vegetation: The primary vegetation type in this unit is native meadow grasses, carex, sedges, rushes, willow, bulrush, cattails, and river hawthorne along the Bear River riparian corridor. The upland sites within the unit are dominated by big sagebrush, black sagebrush, rabbitbrush, snakeweed, and agricultural areas. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: The unit provides year round habitat for mule deer as well as winter habitat for mule deer, elk, and occasionally moose. In the Cache and Box Elder portions of the unit the area is also important for the ring-necked pheasant and quail.

The Bear River and associated riparian area is important as habitat for waterfowl and shorebirds as well as an important fishery. BLM, Utah, State Sensitive Species include the white-faced ibis, long-billed curlew, snowy plover and white pelican.

Recreation: Recreation in this unit is mostly related to fishing and waterfowl hunting as well as canoeing.

Livestock Grazing: Most of the private lands along the river are grazed by cattle, sheep and horses throughout most of the year.

Historic/Cultural Resources: BLM records show no previously recorded sites in this site. Generally, existing cultural resource records show very few prehistoric sites recorded in this unit. The exception is near the mouth of the Bear River , where a number of significant sites are known. This includes the Lower Bear River Archaeological District, which is listed on the National Register of Historic Places. Numerous historic resources are also known to occur in the developed portions of this unit.

Land Status: With the exception of a few isolated BLM parcels of land (1,444 acres, 0.4%), this unit is almost entirely private lands.

Urban Interface/Developments: Several small communities, such as Randolph, Woodruff, Mendon, Collingston, Fielding, Deweyville, and Honeyville occur within the unit. Developments include homes, ranches, and associated improvements.

Access: With the exception of locked gates restricting access into private property, the unit is fairly accessible.

Fire Suppression Hazards: Hazards in this unit include power lines, highways, and structures.

Fire Behavior: Fire occurrence in this unit is relatively low. Meadow grasses and Riparian vegetation within the unit would best fit Fuel Model 3 where the grasses and sedges typically exceed 2½ feet. Cultivated grains can be considered similar to the marshland grasses. Potentially, under the influence of wind, fire intensity increases and may spread across wetlands where fuel continuity and moisture conditions are favorable. Where average grass height is less than 2½ feet, Fuel Model 1 would best predict fire behavior.

A-7 Newfoundland Mountains Bench Area:

Ecological Site Description: Annual precipitation averages 5 to 7 inches and slopes are generally 1 to 20 percent. Ecological sites are mainly Desert Alkali Flat, Desert Salty Silt, Playas, Desert Alkali Bottom, Desert Flat, Desert Salt Flat, Desert Sandy Loam, Desert Oolitic Dunes, Desert Gravelly Loam, Semi-Desert Gravelly Loam, Semi-Desert Stony Loam, and Semi-Desert Shallow Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	10%	10%	70%

Vegetation: The dominant vegetation type in this unit is desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, gray molly, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, and cheatgrass. Forbs include globemallow, princess plume, evening primrose, and a variety of annual forbs. Juniper trees are very scattered in the upper elevations of this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species,

or be limited to monotypic stands of one of the species. This unit represents a healthy and diverse desert shrub community and has been less impacted by the invasion of cheatgrass.

Natural Resources: This unit includes lands that have been proposed for wilderness designation by special interest groups.

This area has been identified as an area for the reintroduction of bighorn sheep which could take place within the next few years. The bighorn sheep are expected to utilize the upper elevations of the range (C-8) much more than this unit, where use will be light. The area is also inhabited by chukar. The ferruginous hawk and burrowing owl, both BLM, Utah, State Sensitive Species, are found in this unit along with other raptors. Juniper trees in this area are used by raptors for nesting. The kit fox, another species of concern, also inhabits this unit.

Recreation: Very light, dispersed recreation occurs in this area.

Livestock Grazing: Historically this area has been grazed by sheep. There is currently no livestock grazing permitted on this unit.

Historic/Cultural Resources: Historic mining structures are located in the north portion of the unit. Relatively few sites have been reported from this unit. However, significant prehistoric sites are known from adjacent lands and are likely to occur within this unit.

Urban Interface/Developments: No significant improvements exist in the unit other than the historical structures related to past mining activities.

Land Status: A few State School Trust Lands sections occur in this unit along with private sections. The remainder of the unit is BLM administered lands (22,900 acres, 79%).

Access: Access is good through the majority of this area, however the unit is very isolated and takes two to three hours to get to the unit. Access is limited in the rocky foothills, and the sand dunes located on the west portion of this unit. There is no access around the southern end of the unit due to fencing and a locked gate at the boundary of the North Test and Training Range.

Fire Suppression Hazards: Hazards include the potential for open mining pits and shafts, unimproved roads, and the fact that the unit borders the North Test and Training Range.

Fire Behavior: Wildland fire behavior within this unit is best predicted by Fuel Model 2. Rates of spread in these fuels are moderate. Fire occurrence in this unit is low. Lightning is the dominant cause of fires.

A-8 North Oquirrh Mountain Area:

Ecological Site Description: Annual precipitation averages 10 to 25 inches and slopes are generally 5 to 80 percent. Ecological sites are generally Semi-Desert Shallow Loam, Semi-Desert Loam, Semi-Desert Gravelly Loam, Upland Shallow Hardpan, Upland Shallow Loam, Upland Loam, Upland Stony Loam, Mountain Loam, Mountain Shallow Loam, Mountain Gravelly Loam, High Mountain Loam, High Mountain Stony Loam, Subalpine Meadow, and Conifer Woodland.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
20%	15%	55%	10%

Vegetation: This unit has a variety of vegetation types. Lower elevation benches and valley bottoms are dominated by annual grasses mixed with noxious weeds in some areas. Scattered stands of big sagebrush with perennial grass understory occur in this mixed annual type. Mid to upper slope vegetation includes mountain mahogany, maple, quaking aspen, snowberry, gambel oak, mountain laurel, big sagebrush, Douglas fir, white fir, bluebunch wheatgrass, and mountain brome. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: Portions of these lands may have special characteristics.

This unit provides crucial deer and elk winter and summer range. The lower canyon bottoms are important deer fawning areas. Blue Grouse and chukar also inhabit the area.

Unique stands of the hybrid oak species Quercus gambelii x turbinella, exist between the 5,000 and 7,000 foot elevation in the southern portion of the unit. This is a hybrid oak cross between gambel oak (Quercus gambellii) and turban oak (Quercus turbinella). Small stands of the hybrid oak species occur in the lower ridges of the southwest portion of the unit.

Recreation: General, dispersed recreation occurs in this area through most of the year with increased use in the fall during the various hunting seasons.

Livestock Grazing: Cattle grazing occurs on portions of the unit between May 15 and October 15.

Historical/Cultural Resources: Only a few small inventories have been conducted in this unit. Cultural resources on adjacent private lands include prehistoric lithic scatters, historic sites, and rock art sites. Similar resources are expected on BLM administered lands in the area.

Urban Interface/Developments: There is a high concentration of urban development occurring on adjacent private properties to the west of this unit. Developments include new homes in the rapidly expanding communities of Lakepoint, Erda, and Pine Canyon, as well as commercial businesses in these same areas. There are a number of significant communication sites along the top of the Oquirrh Mountains on the eastern edge of the unit.

Land Status: This area is mainly BLM administered lands (8,738 acres, 31.1%) in the upper portions of the unit with BLM and private lands mixed in the lower elevations. State School Trust Lands are very limited in this unit. A portion of the private lands at the south end of the unit are leased by Utah Division of Wildlife Resources.

Access: Access is fairly good to the lower bench areas on the west side of this unit. Some of the private lands bordering this unit are fenced with locked gates. The upper elevations of this unit can only be reached by two roads from the east side of the mountain through private lands owned by Kennecott Copper Corporation and both gates are locked.

Fire Suppression Hazards: Hazards in this area include steep, rocky slopes, mining activity, power lines, and heavy timber.

Fire Behavior: Wildland fire behavior in this vegetation type is best predicted by Fuel Model 1 on the lower benches where annual grasses are dominate. In the scattered areas where big sagebrush is more dominant, Fuel Model 6 may be a better predictor of wildland fire behavior. In higher elevations where there is a snowberry/quaking aspen/maple association, fire behavior is best predicted by Fuel Model 5. North facing slopes, where there is a dominance of Douglas fir, would be in Fuel Model 8. Rates of spread in these fuels are low to moderate. Fire occurrence in this unit is moderate. Both lightning and human-caused fires are common. Most human fires are related to the railroad.

A-9 Tooele Valley, North Rush Valley, and Cedar Valley Areas:

Ecological Site Description: Annual precipitation averages 8 to 12 inches and slopes are generally 0 to 10 percent. Major ecological sites includes Desert Shallow Loam, Desert Loam, Desert Clay Loam, Desert Gravelly Loam, Desert Silt Flat, Semi-Desert Loam, Semi-Desert Alkali Loam, Semi-Desert Shallow Hardpan, Semi-Desert Stony Loam, Semi-Desert Sandy Loam, Semi-Desert Sand, and Upland Stony Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
50%	50%	0%	0%

Vegetation: The majority of this unit has been impacted by agricultural uses which have converted these lands from desert and semi-desert vegetation types to monotypic stands of alfalfa, winter wheat and other cultivated species. Where natural vegetation occurs, the areas consist of desert shrubs characterized by greasewood, rabbitbrush, snakeweed, black sagebrush, and big sagebrush. Grasses consist of Indian ricegrass, squirreltail, sand dropseed, and cheatgrass. A variety of annual forbs are found in the unit. Juniper trees are very scattered with heavier concentrations at the upper elevations of this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: These areas have been highly impacted by human use, which has in turn impacted the density and diversity of wildlife species within the unit. This unit provides important winter range for the resident elk herd. Mule deer are found in the unit, with highest numbers during the winter and pronghorn utilize portions of the unit year round. The ring-necked pheasant is an important game bird in this area. The unit also provides important habitat for several raptor species including the ferruginous and Swainson's hawks, and burrowing owl, all BLM, Utah, State Sensitive Species. The Cedar Valley and north Rush Valley areas provide important foraging and roosting habitat for the endangered bald eagle. The kit fox, also a species of concern, inhabits this unit.

Recreation: General, dispersed recreation occurs in this area, with increased use along the Pony Express/Overland Stage Route which has been designated the Pony Express Trail National Back Country Byway.

Livestock Grazing: Winter sheep grazing occurs on portions of this unit February 2 through June 15. Grazing of livestock on private property likely occurs over most of this unit.

Historic/Cultural Resources: Cultural resource concerns within the Tooele Valley portion of this unit include clusters of prehistoric sites near Grantsville and historic structures on adjacent private lands.

Cultural resource concerns within the Cedar Valley portion of this unit include the Pony Express Trail and prehistoric sites. Historic sites and structures such as Camp Floyd and Stage Coach Inn are also present.

Urban Interface/Developments: This unit includes the communities of Tooele, Grantsville, Stockton, Clover, and Rush Valley. Residential and commercial developments are rapidly expanding in these areas. The Cedar Valley area includes the towns of Cedar Fort, Fairfield, and Eagle Mountain. This portion of the unit is more open and less developed than the Tooele area, but has also had an increase in residential and commercial development. Scattered ranches also occur in this unit.

Land Status: This unit is predominately private lands mixed with isolated tracks of BLM land (13,960 acres, 5.3%).

Access: Access is good throughout the unit.

Fire Suppression Hazards: Hazards in this unit would relate to power lines and potential for structure fires. Portions of this unit also border the Tooele Army Depot.

Fire Behavior: Wildland fire behavior on BLM lands within this unit is best predicted by Fuel Model 2 where desert shrubs dominate. However, in some areas where brush is less dominant and grass is more abundant, Fuel Model 1 may be a better predictor of wildland fire behavior. Rates of spread in these fuels are moderate. Fire occurrence in this unit is moderate. Both lightning and human-caused fires are common.

A-10 South Oquirrh Area:

Ecological Site Description: Annual precipitation averages 16 to 30 inches and slopes are generally 5 to 80 percent. Ecological sites are generally Semi-Desert Shallow Loam, Semi-Desert Loam, Semi-Desert Gravelly Loam, Upland Shallow Hardpan, Upland Shallow Loam, Upland Loam, Upland Stony Loam, Mountain Loam, Mountain Shallow Loam, Mountain Gravelly Loam, High Mountain Loam, High Mountain Stony Loam, Subalpine Meadow, and Conifer Woodland.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	50%	20%	20%

Vegetation: The vegetation in this unit is diverse, but is dominated by juniper, mixed with big sagebrush, cliffrose, mountain mahogany, and pinyon. North slope areas contain Douglas fir, white fir, quaking aspen, snowberry, bluebunch wheat, and mountain brome, with the lower canyon areas dominated by gambel oak, maple. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. Private lands on the extreme east slopes are used for dry land wheat farming.

Natural Resources: This unit provides mule deer and elk summer range as well as crucial mule deer and elk winter range. The area is also important for raptor nesting and roosting. Chukars also inhabit the unit. Important foraging areas, as well as a roost site for the endangered bald eagle, occur in this unit. The bald eagle utilizes the unit October through March.

Recreation: General, dispersed recreation occurs in this area with increased use during the various fall hunting seasons.

Livestock Grazing: Grazing in the lower elevations of the unit consists of winter and spring cattle and sheep, November 1 through April 30, and summer cattle in the upper elevations, May 15 through October 15.

Historic/Cultural: Historic mining activity has occurred over much of this unit, including several ghost towns. Prehistoric sites are also known to occur within and adjacent to this unit.

Urban interface/Developments: This unit includes the town of Ophir and is adjacent to the town of Stockton. There are scattered ranches and homes in the northwest portion of the unit. There are also a number of current and historical mining structures. This unit borders the Deseret Chemical Depot.

Land Status: The south and west portions of this unit are mainly BLM administered lands (33,320 acres, 21.1%), while the north and east portions are predominantly private lands. There are several areas of State School Trust Lands scattered through the area.

Access: Access to the unit is limited to Ophir Canyon and a few unimproved jeep trails. Limited access is available in the foothills with upper elevations inaccessible.

Fire Suppression Hazards: Hazards include open mining pits and shafts, steep slopes, and limited access. This unit borders the Deseret Chemical Depot and also includes the Heapleach Mining Operation.

Fire Behavior: Wildland fire behavior within this unit where vegetation is dominated by juniper, perhaps mixed with sagebrush, is best predicted by Fuel Model 6. North slope areas dominated with Douglas-fir would qualify for Fuel Model 8, and the canyon areas where there is a snowberry/quaking aspen/maple association, would best be predicted with Fuel Model 5. Rates of spread in these fuels are low to moderate. Both lightning and human-caused fires occur. Overall fire frequency in this unit is low .

A-11 Fivemile Pass Recreation Area:

Ecological Site Description: Annual precipitation averages 10 to 16 inches and slopes are generally 0 to 25 percent. Major ecological sites are Semi-Desert Gravelly Loam, Semi-Desert Loam, Semi-Desert Sandy Loam, Semi-Desert Stony Loam, Upland Shallow Hardpan and Upland Shallow Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
40%	50%	10%	0%

Vegetation: This unit is dominated by juniper mixed with big sagebrush, black sagebrush, and bitterbrush. Cliffrose can be found on south facing slopes. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. Private lands to the east are used for dry land wheat farming.

Natural Resources: This unit provides mule deer winter range. Raptor nesting occurs in juniper trees within this unit, and includes the ferruginous and Swainson's hawks, both BLM, Utah, State Sensitive Species. The endangered bald eagle uses this unit as a foraging and day roost area.

Recreation: General, high recreation use occurs in this area. Recreational activities are predominated by OHV use, camping, and target shooting. This area is being considered for formal designation as a Recreation Site. The Pony Express/Overland Stage Route, designated as a National Back Country Byway, passes through this unit.

Livestock Grazing: This area is part of the Livestock trail and both cattle and sheep utilize the area from October 1 through May 31.

Historical/Cultural Resources: Historic Mining activity has occurred over much of this unit. Prehistoric sites are also known to occur within and adjacent to this unit. The Pony Express/Overland Stage Route passes through this unit.

Urban Interface/Developments: Developments in this area relate to past and current mining activities, as well as BLM informational signing tied to recreation activities at this site. A plan amendment is currently being developed to address recreation and associated developments for this area.

Land Status: The majority of this unit is BLM administered lands (5,567 acres, 64.6%) with a few sections of State School Trust Lands. Private lands are scattered throughout the unit and are related to past mining activity. And associated patented mining claims.

Access: Access is good throughout the unit.

Fire Suppression Hazards: Hazards include open mining pits and shafts. Mercury and arsenic contaminated mine tailings possibly exist at Manning. Breathing of dust from these tailings could be hazardous. Suppression tactics in this area will not involve disturbing these tailings (i.e., no hand line or dozer line).

Fire Behavior: Wildland fire behavior on lands within this unit is best predicted by Fuel Model 6. Rates of spread in these fuels are moderate. Both lightning and human-caused fires have occurred in this unit. Overall, fire frequency in this unit is moderate. Due to high recreation use, safety of public land users is a concern for fire management in this area.

A-12 Lake Mountain and West Mountain Areas:

Ecological Site Description: Annual precipitation averages 10 to 20 inches and slopes are generally 10 to 60 percent. Major ecological sites are Upland Loam, Upland Stony Loam, Upland Shallow Hardpan, Semi-Desert Alkali Loam, Semi-Desert Shallow Hardpan, Semi-Desert Shallow Loam, Mountain Stony Loam, and Mountain Gravelly Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
50%	30%	20%	0%

Vegetation: Lower elevations in this unit are dominated by cheatgrass with some stands of sagebrush. Higher elevation areas are dominated by juniper, mountain mahogany, serviceberry, Douglas fir, and bluebunch wheatgrass. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. Much of the lower elevation private lands are used for dry land wheat farming.

Natural Resources: This unit provides year round mule deer range. Chukar and a variety of raptor species also inhabit the unit. The ring-necked pheasant is common in the low elevations of the unit.

Recreation: General, dispersed recreation occurs in this area with increased use during the various fall hunting seasons.

Livestock Grazing: Winter and spring cattle grazing occurs at the north end of Lake Mountain November 1 through April 30. There is also summer sheep use on Lake Mountain and West Mountain May 15 through July 30, as well as winter sheep use during the period November 1 through April 30 on West Mountain and Lake Mountain.

Historic/Cultural Resources: Cultural resource concerns for this unit include prehistoric sites and rock art sites in both locations.

Urban Interface/Developments: Both Lake Mountain and West Mountain are becoming more impacted by urban development related to new homes and commercial developments. Adjacent private lands in the north portion of lake Mountain contain an explosives plant, a tire disposal facility, and active mining operations. There are also communication sites at the top of each of the mountain ranges.

Land Status: The majority of the lands within this unit are BLM administered lands (25,102 acres, 44.7%) and State School trust Lands, with a few scattered parcels of private land intermixed.

Access: Several roads dissect the area, but access is limited by steep terrain.

Fire Suppression Hazards: Steep slopes and heavy timber are the main safety hazards in this area. Other major concerns for fire suppression include a high explosives plant and a tire storage area on the east side of Lake Mountain.

Fire Behavior: Wildland fire behavior on BLM lands within this unit is best predicted by Fuel Model 1 at the lower elevations where cheatgrass is dominant. Higher elevations would best be predicted by Fuel Model 6. Rates of spread in these fuels are moderate to high. Both lightning and human-caused fires are common. Fire frequency in this unit is high.

A-13 Laketown Canyon Area:

Ecological Site Description: Annual precipitation averages 16 to 20 inches and slopes are generally 24 to 40 percent. Major ecological sites include Semi-Desert Loam, Semi-Desert Shallow Loam, Semi-Desert Stony Loam, Semi-Desert Clay, Upland Shallow Loam, Upland Loam, Upland Clay, Upland Stony Loam, Semi-Wet Meadow, Semi-Wet Streambank, Wet Fresh Streambank, Semi-Wet Fresh Streambank, Mountain Gravelly Loam, Mountain Clay, Mountain Stony Loam, Mountain Windswept Ridge, and High Mountain Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	20%	70%	5%

Vegetation: The dominant vegetation types in this unit include mountain mahogany, Douglas fir, quaking aspen, chokecherry, snowberry, serviceberry, black sagebrush, big sagebrush, arrowleaf balsamroot, and bluebunch wheatgrass. Alderleaf mountain mahogany can also be found in the unit. Lower elevations have scattered juniper and big sagebrush, with a bluebunch wheatgrass and cheatgrass understory. Associations of these plants vary throughout the unit and vegetation in any

given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit is an Area of Critical Environmental Concern (ACEC) and is the watershed for the community of Laketown. Moose, elk and mule deer use the area as year round range as well as crucial winter range. The sagebrush dominated areas of the unit provide habitat for sage grouse, and the densely forested areas provide habitat for the roughed grouse. The area is also utilized by the endangered bald eagle. Laketown Creek provides habitat for the Bear River variety of the Bonneville Cutthroat trout, a BLM, Utah, State Sensitive Species. The stream also provides a valuable irrigation source to neighboring landowners.

Recreation: This area has high dispersed recreation through most of the year. Recreation use includes hunting, fishing, mountain biking, snowmobiling, and hiking.

Livestock Grazing: Cattle grazing occurs in the upper elevations of the unit May 5 through September 30. Sheep use occurs in the upper elevations of the unit during the periods of May 20 through June 30, and September 20 through October 20. The canyon bottom has been closed to grazing the past three years to improve the condition of the riparian zone and general watershed of this area.

Historic/Cultural Resources: Few cultural resource inventories have been conducted on this unit. Since inventory data for this unit is limited, hazardous fuel reduction and fire rehabilitation projects will require an intensive cultural resource inventory. As additional cultural resource information becomes available, the requirement for cultural resource inventory may change.

Urban Interface/Developments: Improvements within and adjacent to the unit, include residential homes, cabins, power lines, a water treatment facility, and range improvements. This unit borders the community of Laketown.

Land Status: Mixed land ownership exists within this unit with BLM administered lands (10,387 acres, 57%) and private lands.

Access: There is good access to the periphery of this unit in the upper elevations, but the rough and narrow Laketown Canyon road is the only way in and out of the inner portion of the unit. Access into the northwest portion of this unit, near the Laketown Cemetery, is blocked by a locked gate.

Fire Suppression Hazards: Hazards include open mining pits and shafts, steep slopes, dense forested areas, limited access, and the unimproved dead-end road in the valley bottom of Laketown Canyon.

Fire Behavior: Wildland fire behavior is best predicted by Fuel Model 6 where big sagebrush dominates; however, in those areas dominated by snowberry/quaking aspen association, Fuel Model 5 would be a better choice. In areas dominated by Douglas fir, fire behavior would be predicted by Fuel Model 8. At lower elevations where there is scattered juniper with cheatgrass understory Fuel Model 2 may be a better predictor of fire behavior. Rates of spread in this unit are generally low to moderate, but in extreme burning conditions will be high. Historical fire occurrence in this unit is very low. Potential for human caused fires is high.

A-14 Gold Hill Area:

Ecological Site Description: Annual precipitation averages 8 to 16 inches and slopes are generally 15 to 40 percent. Major ecological sites are Alkali Flat, Desert Alkali Bench, Desert Silt Flat, Desert Shallow Loam, Desert Silt Loam, Semi-Desert Loam, Semi-Desert Gravelly Loam, Semi-Desert Shallow Loam, Semi-Desert Shallow Hardpan, Semi-Desert Very Shallow Loam, Upland shallow Hardpan, Upland Stony Loam, Upland shallow Loam and Upland Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	25%	50%	25%

Vegetation: The dominant vegetation in the low elevations of this unit are shadscale, horsebrush, ephedra, rabbitbrush, snakeweed, black sagebrush, and areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, squirreltail, and cheatgrass. Forbs include globemallow, princess plume, and a variety of annual forbs. Upper elevations of the unit are dominated by big sagebrush, juniper and pinyon which occur throughout the unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: The sagebrush areas in this unit provide crucial deer winter range. Pronghorn antelope and chukar use is high in this unit. Some moderate value for watershed exists related to the local spring sources.

Recreation: General, dispersed recreation occurs in this area with increased use during the various fall hunting seasons.

Livestock Grazing: This area is grazed by cattle during the dates of November 1 through April 30.

Historical/Cultural Resources: Cultural values include historic mining sites.

Urban Interface/Developments: There are a few individuals living in the community of Gold Hill. Mining structures are also associated with this community as well as mining claim properties scattered through the unit. A few range improvements are located in the unit.

Land Status: With the exception of numerous patented mining claims, these lands are mainly BLM administered lands 28,142 acres, 77.2%), with a few scattered State School Trust Lands.

Access: Access is fair, but limited to the lower elevations of the unit.

Fire Suppression Hazards: Hazards include open mining pits and shafts, steep slopes, and limited access.

Fire Behavior: Wildland fire behavior in this vegetation type is best predicted by Fuel Model 2. Rates of spread in this unit are low to moderate. Fire occurrence is relatively low. Lightning has traditionally been the only source of ignition in this area.

A-15 Stansbury Island Area:

Ecological Site Description: Annual precipitation averages 10 to 16 inches and slopes are generally 0 to 100 percent. Ecological sites are mainly Alkali Flat, Desert Flat, Desert Gravelly Loam, Semi-Desert Gravelly Loam, Semi-Desert Shallow Loam, Semi-Desert Loam, Semi-Desert Shallow Hardpan, Semi-Desert Stony Loam, Upland Gravelly Loam, Upland Shallow Hardpan, Upland Stony Loam, and Upland Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
65%	10%	20%	5%

Vegetation: The dominant vegetation type in this unit is desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. A variety of annual forbs occur in the unit. Juniper trees are very scattered with heavier concentrations at the upper elevations of the unit. Associations of these plants vary throughout the unit, and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. This area has been impacted by fire in the past which has converted much of the lower elevation desert shrub communities to cheatgrass and other annuals.

Natural Resources: This area is utilized by a number of raptors which nest in the junipers and rock ledges of the unit, as well as the burrowing owl, a BLM, Utah, State Sensitive Species. A small deer herd also inhabits the area. Chukars are common through most of the unit.

Recreation: General, dispersed recreation occurs in this area with increased use during the various fall hunting seasons and during the spring, summer, and fall, on the BLM mountain bike trail.

Livestock Grazing: Cattle grazing occurs in this unit during the period of October 15 through June 15.

Historic/Cultural Resources: Cultural resource concerns for this unit include cave and rock shelter sites, and a large rock art site on adjacent private lands.

Urban Interface/Developments: Developments in the unit consist of recreational signing of the mountain bike trail, structures related to sand and gravel extraction activities, and range improvements such as fences and corrals.

Land Status: Private lands encompass most of the entire perimeter of the unit, with BLM administered lands (12,625 acres, 63.4%) making up a majority of the unit.

Access: Access is very limited in this unit due to locked gates on the east and west sides of the unit. There are a few very rough, unimproved jeep trails in the interior and east portions of the unit.

Fire Suppression Hazards: Hazards include steep slopes and limited access. The high visibility of this unit from Salt Lake City encourages media and public involvement which could present associated hazards.

Fire Behavior: Wildland fire behavior is best predicted by Fuel Model 2 on the lower elevations of the Island where desert shrub with a cheatgrass understory is common. Fire behavior on the lower to middle slopes where cheatgrass is dominant is best predicted by Fuel Model 1. In some cases where scattered juniper is present, fire behavior would be predicted by Fuel Model 2. Rates of spread in these light to moderate fuels are moderate to extreme. The effect of the lake on local wind conditions during a hot summer afternoons, combined with prevailing general winds near the ridges, results in extremely erratic and intense fire behavior. Fire occurrence is high in this unit. Lightning has been the predominant source of ignitions, but human caused fires have occurred.

A-16 Lakeside Mountain Area:

Ecological Site Description: Annual precipitation averages 8 to 12 inches and slopes are generally 26 to 50 percent. Ecological sites are mainly Alkali Flat, Desert Flat, Desert Gravelly Loam, Semi-Desert Gravelly Loam, Semi-Desert Shallow Loam, Upland Gravelly Loam, and Upland Shallow Hardpan.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
15%	50%	25%	10%

Vegetation: Vegetation within this unit is primarily juniper, cliffrose, big sagebrush, black sagebrush, bluebunch wheatgrass, Salina wildrye, and desert shrub species such as ephedra and shadscale in the lower elevations of the unit. Lower elevations of this area have been converted to cheatgrass and other annuals due to past fire activity and invasion of exotic species. Some isolated patches of curl-leaf mountain mahogany occurs at the higher elevations. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This area has mule deer year round use as well as pronghorn year round use in the low elevations of the unit. This unit is also important habitat for chukars. Isolated junipers within this unit are commonly used by nesting raptors, including ferruginous and Swainson's hawks, BLM, Utah, State Sensitive Species.

Recreation: In general, dispersed recreation occurs in this area with increased use during the various fall hunting seasons.

Livestock Grazing: Winter and spring cattle grazing occurs in this area November 1 through May 15, with most use in the lower elevations. Winter and spring sheep grazing also occurs at the north end of the unit November 1 through April 30.

Historical/Cultural Resources: Cultural resource concerns for this unit include cave and rock shelter sites.

Urban Interface/Developments: Major improvements within the unit include several communication sites and the Federal Aviation Authority (FAA) Doppler radar site for Salt Lake International Airport located on Black Mountain. In addition, there are structures at the Marblehead plant and Poverty Point. Mining structures are also found on the unit. Less significant improvements include several wildlife guzzlers and other rangeland improvements.

Land Status: Several sections of State School Trust Lands and private lands are located in association with the dominance of BLM administered lands (21,173 acres, 75.5%).

Access: The lower elevations of this unit are fairly accessible and a few roads do cross the northern portion of the unit. The upper elevations are inaccessible.

Fire Suppression Hazards: Hazards include open mining pits and shafts, steep slopes, power lines, and limited access. The unit is also in close proximity to the North Test and Training Range.

Fire Behavior: Wildland fire behavior in this vegetation type is best predicted by Fuel Model 2 at lower elevations where desert shrub is prevalent. Low to middle elevation areas where cheatgrass is dominant, is best predicted by Fuel Model 1. Higher elevations where juniper is the primary vegetation are best represented by Fuel Model 6. Rates of spread in these light to moderate fuels are moderate to extreme. The lake has an effect on local winds in the east drainages. Fire occurrence is high in this unit. Lightning has been the predominant source of ignitions, but some human caused fires have also occurred.

A-17 Rush Valley Area:

Ecological Site Description: Annual precipitation averages 8 to 12 inches and slopes are generally 0 to 20 percent. Major ecological sites include Desert Shallow Loam, Desert Loam, Desert Clay Loam, Desert Gravelly Loam, Desert Silt Flat, Semi-Desert Loam, Semi-Desert Alkali Loam, Semi-Desert Shallow Hardpan, Semi-Desert Stony Loam, Semi-Desert Sandy Loam, and Upland Stony Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
20%	65%	15%	0%

Vegetation: Vegetation within this unit is dominated by big sagebrush, black sagebrush, greasewood, winterfat, pigmy sagebrush, and scattered patches of Gardner saltbush in the low elevations of the unit. Understories are mixed perennial and annual grasses with annuals predominating. Isolated and scattered juniper exist in the higher elevations of the unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit is deer winter range. In addition, this unit is a high use pronghorn area. Portions of this unit are utilized by sage grouse. Ferruginous and Swainson's hawks, both BLM, Utah, State Sensitive Species, and other raptor use is common in the area. This unit is an important area for the endangered bald eagle which forages and roosts in the unit. This area is also inhabited by the kit fox, a BLM, Utah, State Sensitive Species.

Pohl's milkvetch (Astragalus lentiginosus var. pohlii), a BLM, Utah, State Sensitive Species, is located in the mixed basin big sagebrush/greasewood community in lower Rush Valley.

Recreation: In general, dispersed recreation occurs in this area with increased use during the various fall hunting seasons and various holidays throughout the year. Increased year round recreation is focused along the Pony Express/Overland Stage Route, which has been designated a National Back Country Byway.

Livestock Grazing: The northern half of the unit is used for both winter sheep and cattle range. Cattle grazing occurs November 10 through June 30, with sheep grazing occurring during the period of November 1 through April 30.

Historic/Cultural Resources: This unit contains portions of the Pony Express/Overland Stage Route and the Pony Express stations of Rush Valley and Faust. Concentrations of prehistoric sites have been identified at several areas within this unit. Urban Interface/Developments: This unit includes the community of Vernon and associated private residences and commercial developments. There are scattered ranch structures in the southern portion of the unit. Other facilities include the Deseret Chemical Depot and incinerator, the railroad and associated communication sites, an informational kiosk on the Pony Express/Overland Stage Route, and miscellaneous range improvements.

Land Status: Most of the lands are administered by BLM (85,093 acres, 64.7%), but there are extensive areas of private lands, as well as scattered State School Trust Lands.

Access: Access is good throughout the unit.

Fire Suppression Hazards: Hazards include open mining pits and shafts, and the Deseret Chemical Depot.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 6. Rates of spread in the unit are moderate. Fire occurrence is moderate. Lightning and human-caused fires are both common.

A-18 Promontory Mountains, Hansel Mountains, West Hills, and Blue Springs Hills Areas:

Ecological Site Description: Annual precipitation averages 18 to 20 inches and slopes are generally 26 to 40 percent. The major ecological site is Upland Stony Loam with gravels in the soil.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	0%	100%	0%

Vegetation: The dominate vegetation in this unit is juniper, big sagebrush, black sagebrush, bitterbrush, snakeweed, rabbitbrush, bluebunch wheatgrass, and cheatgrass. Portions of this unit have been converted to winter wheat and other agricultural crops. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit provides year round habitat for mule deer and pronghorn. The lower elevations of this unit provide habitat for the sharptailed grouse, chukar, and Hungarian partridge.

Recreation: In general, dispersed recreation occurs in this area, but is limited due to poor public access into the area.

Livestock Grazing: No authorized grazing occurs on the BLM administered lands in this unit. Cattle grazing does occur on the private lands during spring, summer, and fall.

Historical/Cultural Resources: No significant cultural or historical concerns have been identified in this unit.

Urban Interface/Developments: Developments in the unit include the Federal Aviation Administrations (FAA) Doppler radar site. Other improvements include scattered ranches and associated structures, as well as various range improvements.

Land Status: These lands are predominantly private lands with scattered State School Trust Lands and very isolated, small tracts of BLM administered lands (3,301 acres, 1.1%).

Access: Access in this unit is limited due to locked gates on private land. Roads do bisect the unit and access to the lower elevations is possible with permission from the private land owner. Most of the upper elevations are inaccessible.

Fire Suppression Hazards: Hazards include steep slopes and limited access.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 1. Rates of spread in the unit are moderate. Fire occurrence is low. Both lightning and human caused fires have occurred in this area.

A-19 Antelope Island Area:

Ecological Site Description: Annual precipitation averages 18 to 20 inches and slopes are generally 26 to 60 percent. The major ecological sites are Desert Stony Loam, Semi-Desert Stony Loam, and Upland Stony Loam with gravels in the soil.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	0%	100%	0%

Vegetation: The dominate vegetation type on these six isolated parcels of BLM land is needle-and-thread grass and cheatgrass. This is due to past fire occurrence which has converted native desert and semi-desert species to monotypic stands of cheatgrass. Other plant species which occur on the unit include juniper, bitterbrush, low rabbitbrush, snakeweed, and bluebunch wheatgrass. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: The BLM lands within this unit are managed as if part of the Antelope Island State Park. The BLM lands, and surrounding areas, provide habitat for bison, mule deer, pronghorn, and Rocky Mountain bighorn sheep. This area is also excellent habitat for chukar. The area is utilized by several raptor species, including the burrowing owl, a BLM, Utah, State Sensitive Species.

Recreation: As a state park this area receives high levels of recreational use consisting of sightseeing, mountain bike riding, hiking, and hunting of bison.

Livestock Grazing: No livestock grazing occurs in this unit.

Historic/Cultural Resources: The oldest occupied non-aboriginal structure in Utah is the Fielding Garr Ranch at the south end of Antelope Island. There are also Fremont prehistoric sites on the island. No significant cultural or historical concerns have been identified in this unit on BLM administered lands.

Urban Interface/Developments: The Antelope Island State Park and associated Visitors Center are located in the northwest portion of the unit. Other developments include the structures within the Garr Ranch area on the east side of the island.

Land Status: There are six tracts of BLM administered land on Antelope Island which total 313 acres. The remainder of the land is administered by State Parks and Recreation.

Access: Limited road access is available around the perimeter of this unit, but few roads exist within the interior of the unit. Cross country travel is possible in the low elevations of the unit.

Fire Suppression Hazards: Hazards include steep slopes, limited access, and high number of recreationists.

Fire Behavior: Wildland fire in this unit is best predicted by Fuel Model 1. Rates of spread in these light fuels are moderate to high. Both lightning and human-caused fires have occurred on the island.

A-20 East Curlew Valley, Hansel Valley, and Blue Creek Valley Areas:

Ecological Site Description: Annual precipitation averages 7 to 9 inches and slopes are generally 5 to 30 percent. Major ecological sites are Desert and Semi-Desert Shallow Loam, Gravelly Loam, Alkali Bench, Loam, and Alkali Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	50%	40%	0%

Vegetation: The primary vegetation in this unit is big sagebrush, black sagebrush, greasewood, shadscale, rabbitbrush, snakeweed, Indian ricegrass, squirreltail, and blue grass. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. Portions of the private lands within the unit have been converted from natural vegetation into winter wheat and other agricultural crops.

Natural Resources: The unit provides habitat for pronghorn and mule deer. In addition, this unit provides important habitat for sharp-tailed grouse, sage grouse, chukar, and Hungarian partridge. Historically, the kit fox inhabited this unit. The area is also important for a variety of raptors including the ferruginous and Swainson's hawks, and the burrowing owl, all BLM, Utah, State Sensitive Species.

The BLM, Utah, State Sensitive species Passey onion (Allium passeyi) occurs within Golden Spike National Monument and possibly occurs within the Central Pacific Railroad Grade Area of Critical Environmental Concern.

Recreation: General, dispersed recreation occurs in this area and consists of OHV use, camping, mountain biking, and hunting. Recreation use is much higher in the area near the Central Pacific Railroad Grade, designated the Transcontinental National Back Country Byway, located in the southern portion of the unit.

Livestock Grazing: Most of the private lands are grazed in this unit and could be grazed at any time of year in any given area. On BLM administered lands cattle grazing occurs November 15 through May 16, and sheep grazing occurs January 1 through February 22.

Historic/Cultural Resources: Historic/Cultural Resources: Cultural resource concerns for this unit include the Central Pacific Transcontinental Railroad Grade (Area of Critical Environmental Concern) and associated sites and clusters of prehistoric sites near springs. The Bidwell-Bartleson Trail passes through a portion of this unit. Protection concerns include the wood trestles and culverts, sidings, and stations along the railroad grade.

The Union Pacific Railroad Grade is also in this unit. Clusters of prehistoric sites have been identified at several locations. Some of the oldest known sites in the district occur in this unit. Historic trails in this unit include portions of the Bartleson-Bidwell Trail and the Henley or Salt Lake Cutoff.

Interface/Developments: This unit includes the town of Snowville as well as scattered ranches throughout the unit.

Land Status: The majority of this unit is private lands, with scattered BLM administered lands (4,842 acres, 1.3%) and State School Trust Lands.

Access: With the exception of locked gates on private property, access is good through most of the unit.

Fire Suppression Hazards: Hazards in this area include power lines, Chevron gas lines, and the Thiokol facility.

Fire Behavior: Wildland fire behavior where big sagebrush dominates the area is best predicted by Fuel Model 6. In some small areas of concentrated desert shrub species Fuel Model 2 may be a better predictor of wildland fire behavior. Rates of spread in these fuels can be moderate. Typically, areas with heavy concentrations of perennial grasses will not result in high

spread rates and fire intensities unless fuel moisture is extremely low during periods of drought. Sites converted to winter wheat and other agricultural crops are not well represented in the Fire Behavior Prediction System fuel models, except during very extreme conditions, in which case Fuel Model 1 or 3 may represent the fire behavior depending upon fuel loading. Fire occurrence in this unit is extremely low.

A-21 Wasatch Front and Cache Valley Urban Areas:

Ecological Site Description: Annual precipitation averages 12 to 20 inches and slopes are generally 5 to 30 percent. Major ecological sites are Semi-Desert Shallow Loam, Gravelly Loam, Upland Gravelly Loam, Alkali Bench, Loam, and Alkali Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	100%	0%	0%

Vegetation: The primary vegetation in this unit is agricultural crops, native meadow grasses, and a variety of cultivated trees, shrubs, and grasses in the urban areas.

Natural Resources: This unit includes significant mule deer and elk winter ranges. The unit is also important habitat for chukar, ring-necked pheasant, and quail, as well as a variety of passerine birds.

Several major riparian habitats occur within this unit along with associated fisheries.

Recreation: The upper elevations of the unit have dispersed recreation, the remainder of the unit has high recreation use. A portion of the Pony Express/Overland Stage Route, designated as a National Back Country Byway, passes through this unit.

Livestock Grazing: Much of the unit is grazed by cattle, sheep, and horses during the winter.

Historic/Cultural Resources: This unit contains both prehistoric sites and substantial numbers of significant historic resources.

Urban Interface/Developments: This is the most developed unit within the district and contains many small towns and communities as well as the major cities of Logan, Brigham City, Ogden, Salt Lake City, Provo, Spanish Fork, and Payson.

Land Status: The majority of this unit is private lands, with scattered BLM administered lands (2,381 acres, .3%) and State School Trust Lands.

Access: Other than locked gates on private lands, most of the unit is accessible.

Fire Suppression Hazards: Hazards in this unit include structures, power lines, gas facilities, etc.

Fire Behavior: Wildland fire behavior in the Wasatch Front urban interface with the undeveloped natural lands can be variable due to the diversity of vegetation and topography. However, areas along the Front that have high densities of oak brush are best predicted with Fuel Model 5; however, these areas under extreme fuel and weather conditions exhibit intense fire behavior and are best predicted with Fuel Model 4. Sites dominated with Juniper and/or sage fit Fuel Model 6. Due to the steepness of the terrain common to this unit, fire spread and intensity is increased. Fire occurrence in this unit is relatively low, but has a relatively high probability of human-caused ignitions due to the population density.

B-1 Deep Creek Valley and Clifton Flat Areas:

Ecological Site Description: Annual precipitation averages 7 to 16 inches and slopes are generally 2 to 30 percent. Ecological sites are mainly Semi-Desert Loam, Upland Loams, Shallow Loams, Shallow Gravelly Loams, Stony Loams, Shallow Hardpans, Sandy Loams and Alkali Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	65%	30%	0%

Vegetation: Vegetation in this unit is dominated by big sagebrush, black sagebrush, greasewood, shadscale, and scattered juniper and pinyon over much of the area, with denser stands of the trees in the upper elevations of the unit, especially in the foothills along the west side of the Deep Creek Mountains. Grasses include squirreltail, bluegrass, and cheatgrass.

Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: Year round pronghorn habitat exists within this unit as well as crucial mule deer winter range. The southern portion of the unit is important sage grouse habitat which includes strutting grounds, nesting habitat, and brood rearing areas. Several raptor species inhabit the unit including the ferruginous hawk and burrowing owl, both BLM, Utah, State Sensitive Species, and scattered raptor nests are found throughout this unit.

The area is also an important woodland and pine nut gathering area.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer with hiking and sightseeing as well as in the fall during the various hunting seasons. Portions of the upper elevations of this unit are also popular for gathering pine nuts. High recreation use is also associated with the pony Express/Overland Stage Route, which has been designated the Pony Express Trail National Back Country Byway.

Livestock Grazing: The area is used for both winter (November 1 through April 30) and summer (April 1 through September 15) cattle range. The Clifton Flats area also has winter sheep use during the period of November 1 through April 30.

Historic/Cultural Resources: Cultural resource concerns for this unit include the Pony Express/Overland Stage Route and the Burnt Station Pony Express site. Prehistoric sites exist in the Deep Creek Valley.

Urban Interface/Developments: The community of Ibapah is found in the this unit as well as isolated ranches in the southern portion of the unit. The Goshute Indian Reservation, and associated residences and business offices, are located just south of the unit. Other developments include range improvements such as fences and water developments, as well as power lines.

Land Status: Most of the unit is BLM administered land (59,231 acres, 84.3%), with State School Trust Lands and private lands scattered through the unit.

Access: In general, access is good throughout the unit.

Fire Suppression Hazards: No hazards have been identified for this unit.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 6. Rates of spread in the unit are moderate. Fire occurrence is low. Both lightning and human caused fires have occurred in the unit.

B-2 Lower Pilot Mountain Bench Area:

Ecological Site Description: Annual precipitation averages 7 to 9 inches and slopes are generally 0 to 10 percent. Major ecological sites include Desert and Semi-Desert Gravelly Loam, Shallow Loam, Gravelly Sandy Loam, Shallow Hardpan, Flat, Alkali Bench, Alkali Flat, and Silt Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	30%	55%	5%

Vegetation: Dominant vegetation in this unit is primarily desert shrub species including shadscale, low sagebrush, black sagebrush, big sagebrush, greasewood, rabbitbrush, bud sagebrush, ephedra, horsebrush, and snakeweed. In addition, juniper and pinyon are found in the unit with an understory of Indian ricegrass and other perennial and annual grasses. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This area provides important mule deer and elk winter range as well as year round antelope use. Chukar use is also common in this unit. This unit provides important sage grouse habitat for strutting grounds, nesting, and brood rearing areas. Ferruginous and Swainson's hawks, and burrowing owl, all BLM, Utah, State Sensitive Species, as well as other raptor species, use the unit. Portions of this unit are utilized by the kit fox, also a species of concern.

Recreation: In general, dispersed recreation occurs in this area, with increased use during the summer with hiking, camping, and sightseeing, as well as in the fall during the various hunting seasons.
Livestock Grazing: This area is grazed by cattle May 10 through March 31, and by sheep January 1 through March 28.

Historic/Cultural Resources: Cultural resource concerns for this unit include the Bartleson-Bidwell Trail and portions of the Hasting's Cutoff. Prehistoric sites are known to occur in several areas in this unit. The interpretive kiosk at Donner Spring on

the TL Bar Ranch was a cooperative project between the ranch, BLM, and the Crossroads Chapter of the Oregon California Trails Association (OCTA).

Urban Interface/Developments: This unit includes the Doudy Ranch as well as the TL Bar Ranch. There are several rangeland improvements in this unit such as fences, guzzlers, and spring developments.

Land Status: Most of the unit is BLM administered lands (14,639 acres, 51.7%), with scattered State School Trust Lands, and private lands associated with isolated ranches.

Access: Several two track roads access the lower portions of this unit. Access to the upper part of the benches is limited.

Fire Suppression Hazards: No hazards have been identified for this unit.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 2 at lower elevations where desert shrub species are prevalent. Rates of spread in the unit are moderate. Fire occurrence is low. Lightning is the main source of ignition.

B-3 Grouse Creek and Raft River Mountain Areas:

Ecological Site Description: Annual precipitation averages 10 to 20 inches and slopes are 2 to 50 percent. Ecological sites are mainly Upland and Mountain Loam, Gravelly Loam, Shallow Loam, Shallow Gravelly Ridge, Stony Loam, Juniper Savana, Windswept Ridge, Mahogany Thicket, and Aspen Thicket. The northern end of this unit is within the Columbia River Ecoregion.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
25%	15%	50%	10%

Vegetation: Vegetation in this unit is mainly big sagebrush, black sagebrush, bitterbrush, mountain mahogany, serviceberry, pinyon, and juniper with a mixed understory of bluebunch wheatgrass, cheatgrass and various forbs. Douglas fir, white fir, and quaking aspen, are found on north facing aspects and drainage bottoms. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit provides crucial deer winter range and marginal year round habitat. The area is also utilized by the Grouse Creek elk herd throughout the year. Sage grouse nesting habitat and brood rearing areas are scattered throughout the unit. The bald eagle, an endangered species, inhabits this unit in the winter, and utilizes the area for foraging and roosting.

There are a few perennial streams in the unit which are inhabited by several different fish species.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer with hiking and sightseeing, as well as in the fall during the various hunting seasons.

Livestock Grazing: This unit is grazed by cattle May 1 through September 30, and by sheep December 1 through March 31.

Historic/Cultural Resources: This unit contains the highest densities of prehistoric sites reported within the Salt Lake District. Care should be taken to protect significant sites from fire and suppression operations. Historic structures on BLM managed lands should also be protected.

Intensive cultural resource inventories are required for hazardous fuel reduction and fire rehabilitation projects. Post-fire reviews should include an examination by an archaeologist to determine if cultural resources have been impacted by the fire or suppression activities. Since the site density is so high, requests for cultural resource services for hazardous fuel reduction or prescribed fire projects should be made at least one year in advance of the proposed project. Due to prohibitive mitigation costs and time constraints, cultural resource considerations may eliminate some hazardous fuel reduction and prescribed fire projects in this unit from further consideration.

Urban interface/Developments: Isolated ranch improvements may exist on adjacent properties as well as rangeland improvements such as spring developments, fences, corrals, etc.

Land Status: This area is mainly private lands with scattered and blocked portions of BLM administered lands (29,052 acres, 20.2%) and scattered State School Trust Lands.

Access: Several roads and jeep trails dissect this unit. Off-road access is good, but limited in most of the upper elevations of this unit. Locked gates on private lands restrict access onto portions of the Raft River Mountains and Grouse Creek Mountains.

Fire Suppression Hazards: Forested areas and steep slopes are hazards within this unit.

Fire Behavior: Wildland fire behavior, in the dense sagebrush and mixed brush areas of this unit, is best predicted by Fuel Model 6. Higher elevations with Douglas fir, white fir, and quaking aspen, would fit Fuel Model 8. Rates of spread are moderate. Fire occurrence is low. Lightning is the main source of ignition, although human-caused fires have occurred.

B-4 Semi-Desert and Upland Areas of NW Box Elder County:

Ecological Site Description: Annual precipitation averages 10 to 16 inches and slopes are 0 to 25 percent. Ecological sites are mainly Semi-Desert and Upland Loams, Shallow Loams, Shallow Gravelly Loams, and Stony Loams and Clays. On the southern edge of this zone there is also Desert Flat, Desert Loam, and Desert Shallow Loam. The northern portion of this unit is within the Columbia River Ecoregion.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
25%	15%	60%	0%

Vegetation: Vegetation in this unit is mainly juniper, big sagebrush, black sagebrush, bitterbrush, rabbitbrush, mountain mahogany, and serviceberry, and spiny hopsage, with a mixed understory of bluebunch wheatgrass, cheatgrass, and various forbs. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: These areas provide crucial deer winter range, important elk year round habitat, and year round pronghorn habitat in the lower elevations of the unit. Sage grouse strutting grounds, nesting habitat, and brood rearing areas are scattered throughout this unit. Chukars and Hungarian partridge inhabit the area. The bald eagle, an endangered species, utilizes the area for foraging and roosting, and this area is important to a variety of other raptors.

Several perennial and intermittent streams occur in the unit which provide habitat for a variety of fish species.

BLM, Utah, State Sensitive plant species which occur in this unit include the Goose Creek milkvetch (Astragalus anserinus) and the Idaho Penstemon (Penstemon idahoensis) which both occur within the Goose Creek area of this unit.

BLM, Utah, State Sensitive plant species Arabis falcatoria has been located on private land near Lynn. Potential exists for the plant to occur on nearby areas of BLM administered lands. Within the northern portion of this area, near Raft River Narrows, the Single-leaf Pinyon Pine occurs. This is an outlier species for this far north.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer with hiking and sightseeing, as well as in the fall during the various hunting seasons.

Livestock Grazing: Portions of this unit are grazed by cattle year round. Sheep grazing occurs during the period of December 1 through April 27, and horses graze the unit November 1 through April 30.

Historic/Cultural Resources: Historic sites in this unit include the Rosebud Field Station (CCC Spike Camp) and historic trails which pass through the southern portion of the unit.

High densities of prehistoric sites are scattered in this unit. Care should be taken to protect these areas from fire damage and suppression operations.

Intensive cultural resource inventories are required for hazard reduction and fire rehabilitation projects. Post-fire reviews should include an examination by an archaeologist to determine if cultural resources have been impacted by the fire or suppression activities. Since the site density is so high, requests for cultural resource services for hazardous fuel reduction and prescribed fire projects should be made at least one year in advance of the proposed project. Due to prohibitive mitigation costs and time constraints, cultural resource considerations may eliminate some hazardous fuel reduction and prescribed fire projects in this unit from further consideration.

Urban Interface/Developments: This unit includes the ranching communities of Grouse Creek, Etna, Rosette, Park Valley, Yost, and Standrod. These communities contain are clusters of home sites and ranches, with other isolated ranches scattered through the unit. Other developments include mining structures, communication sites, power lines, and range improvements.

Land Status: This area is a mixture of BLM administered lands (169,891 acres, 35%) in association with scattered Stats School Trust Lands and private lands.

Access: Access is fairly good through most of the unit, with the exception of dense juniper stands and areas with steep slopes. A few areas have restricted access due to locked gates on private lands.

Fire Suppression Hazards: Other than dense juniper and pinyon forested areas, no hazards have been identified for the unit.

Fire Behavior: Wildland fire behavior in the dense sagebrush and mixed brush areas of this unit, is best predicted by Fuel Model 6. Rates of spread are moderate. Fire occurrence is low. Lightning is the main source of ignition. Wildland fire behavior in areas of dense juniper are best predicted by Fuel Model 2 or 6 depending on crown density and understory fuel loadings.

B-5 West Curlew Valley, Matlin Mountain, and Hogup Mountain Areas:

Ecological Site Description: Annual precipitation averages 6 to 11 inches and slopes are generally 0 to 45 percent in the desert shrub portions of the unit and increasing to 40% in the upper elevations. Major ecological sites are Desert and Semi-Desert: Gravelly Loam, Loam, Shallow Loam, Alkali Flat, Shallow Hardpan, Sandy Loam, Alkali Sand, and Alkali Bench.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	20%	50%	20%

Vegetation: This unit is considered desert, semi-desert, and upland transition. The desert and semi-desert vegetation primarily consists of big sagebrush, greasewood, shadscale, fourwing saltbush, gray molly, spiny hopsage, winterfat, rabbitbrush, snakeweed, and black sagebrush with understory of both perennial and annual grasses. The upland transition areas on the Matlin , Wildcat, and Hogup Mountains are predominantly big sagebrush, black sagebrush, bluebunch wheatgrass, and juniper with occasional pinyon. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: There is important mule deer winter range located in the north portion of the Matlin Mountains, on Baker Hill, and on the Wildcat Hills. The area is also year round pronghorn habitat. In addition, this unit provides important sage grouse habitat for strutting grounds, nesting, and brood rearing. This unit is inhabited by the kit fox, a BLM, Utah, State Sensitive Species. The unit provides habitat for the endangered bald eagle, October through March, as well as for other raptors including the Ferruginous and Swainson's hawks, both BLM, Utah, State Sensitive Species.

Recreation: General, dispersed recreation occurs in this area, with increased use along the Transcontinental National Back Country Byway.

Livestock Grazing: Cattle grazing occurs in this unit October 16 through May 31, sheep grazing occurs November 1 through April 15, and horses utilize the unit December 1 through April 30.

Historic/Cultural Resources: Cultural resource concerns for this unit include the Central Pacific Transcontinental Railroad Grade (Area of Critical Environmental Concern) and associated sites and clusters of prehistoric sites near springs. The Bidwell-Bartleson Trail passes through a portion of this unit. Protection concerns include the wood trestles and culverts, sidings, and stations along the railroad grade.

The Union Pacific Railroad Grade is also in the eastern portion of this unit. The Matlin Mountains contain the remnants of two historic wooden animal traps on state, BLM, and private lands. Both of these sites are susceptible to destruction by wildland fire. Clusters of prehistoric sites have been identified at several locations. Some of the oldest known sites in the district occur in this unit. The Wildcat Hills contains a prehistoric obsidian source. The former community of Russian Knoll is also present in this unit. Historic trails in this unit include portions of the Bartleson-Bidwell Trail and the Henley or Salt Lake Cutoff.

Urban Interface/Developments: A few ranches and associated structures exist in the unit. Other improvements include guzzlers, troughs, pipelines, and fencing. Regeneration stations associated with the fiber optics line occur across the unit.

Land Status: The majority of these lands are administered by the BLM (212,106 acres, 54%), however several portions of the unit are a checkerboard of BLM, State School Trust Lands, and private lands.

Access: Vehicle access is good throughout the unit with the exception of the upper elevations of the Matlin and Hogup Mountains and Baker Hills. Access to the south tip of this unit requires crossing the canal associated with the Great Salt Lake pumping project at the pump station. The gates are usually locked.

Fire Suppression Hazards: Hazards in this area relate to the weak trestles and culverts on the Central Pacific Railroad Grade as well as the increased potential for flat tires. No other hazards have been identified for this unit.

Fire Behavior: Wildland fire behavior where big sagebrush dominates the area is best predicted by Fuel Model 6. In areas where sagebrush is scattered and the primary carrier of the fire is an understory of grass, Fuel Model 2 may be a better predictor of fire behavior. Rates of spread in these fuels are moderate. In areas of more dense juniper, Fuel Model 6 may be a better predictor of fire behavior. Fire occurrence in this unit is low. Lightning is the dominant cause of fires, but historically, some human caused fires have occurred.

B-6 East Onaqui, South Mountain, Oquirrh Mountain Foothills, and North Simpson Mountain Areas:

Ecological Site Description: Annual precipitation averages 10 to 14 inches and slopes are generally 1 to 15 percent. Major ecological sites include Desert loam, Desert Shallow Loam, Desert Clay Loam, Desert Gravelly Loam, Semi-Desert Loam, Semi-Desert Alkali Loam, Semi-Desert Shallow Hardpan, Semi-Desert Stony Loam, and Semi-Desert Sandy Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
50%	50%	0%	0%

Vegetation: The primary vegetation in these areas is big sagebrush, black sagebrush, rabbitbrush, snakeweed, greasewood, shadscale, winterfat, cliffrose, bluebunch wheatgrass and juniper. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: These three areas are inhabited by mule deer in winter and pronghorn year round. Sage grouse historically inhabited these areas but current numbers are very low. The areas are also important to various raptor species including the bald eagle, an endangered species, and the ferruginous and Swainson's hawks, both BLM, Utah, State Sensitive Species.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer and fall during the various hunting seasons.

Livestock Grazing: Cattle and sheep graze this unit between November 15 and April 10.

Historic/Cultural Resources: Cultural resource concerns for this unit include the historic mining districts of Ophir and Mercur. Prehistoric sites are also known from the Mercur area. An additional area of concern is the Mercur Cemetery.

Urban Interface/Developments: This unit is in close proximity to private lands which include residences and associated developments, and borders the Deseret Chemical Depot on three sides. Rangeland improvements also exist in the area such as fences and water developments.

Land Status: These areas are predominantly BLM administered lands (62,337 acres, 50.2%) intermixed with private lands. There are a few sections of State School Trust Lands also found in this unit.

Access: Roads dissect this unit and off-road access is good.

Fire Suppression Hazards: Mercury and/or arsenic contaminated out wash tailings exist at the mouth of Mercur Canyon, and breathing of dust from these tailings may be hazardous. This unit also borders the Deseret Chemical Depot.

Fire Behavior: Wildland fire behavior in the sagebrush is best predicted by Fuel Model 6. Rates of spread are moderate. Fire occurrence is low. Both lightning and human-caused fires are common in this unit.

B-7 Thorpe Hills, Tintic Mountains, Sheeprock Mountains and South Simpson Mountain Areas:

Ecological Site Description: Annual precipitation averages 8 to 20 inches and slopes are generally 5 to 25 percent. Major ecological sites are Desert Flat, Semi-Desert Alkali Loam, Semi-Desert Loam, Semi-Desert Sand, Semi-Desert Sandy Loam, Semi-Desert Gravelly Loam, Semi-Desert Stony Loam, Upland Shallow Hardpan, Upland Stony Loam, Upland Loam, Mountain Stony Loam, Mountain Gravelly Loam, and Mountain Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	95%	0%	0%

Vegetation: Lower elevations in this unit are dominated by juniper, big sagebrush, black sagebrush, cliffrose, greasewood, spiny hopsage, and Indian ricegrass . Upper elevations have mountain mahogany, bitterbrush, quaking aspen, serviceberry, white fir, and Douglas fir. Some of the best stands of pinyon pine in the district are found in this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This area provides crucial deer winter range, as well as light pronghorn use year round in the low elevations of the unit. The area provides marginal sage grouse habitat. In all of the areas, especially Thorpe Hills, raptor use is high, including the ferruginous hawk, a BLM, Utah, State Sensitive Species. The bald eagle, an endangered species, utilizes these areas for foraging and roosting during the period of October through March.

Recreation: In general, dispersed recreation occurs in this area with increased use during the spring, summer, and fall with hiking, camping, and OHV use, as well as in the fall during the various hunting seasons.

Livestock Grazing: Winter, spring and early summer sheep grazing occurs November 1 through June 15, and summer and early fall cattle grazing occurs within the unit March 1 through October 15.

Historic/Cultural Resources: Significant concentrations of prehistoric sites have been identified at several locations within this unit. Historic mining activity is present in the Tintic and Simpson Mountains.

Urban Interface/Developments: Several scattered ranches occur in the South Simpson Mountain, Sheeprock Mountain and Tintic Mountain areas. Other developments include mining structures and historic buildings, as well as range improvements.

Land Status: The majority of this area is BLM administered lands (79,399 acres, 57.1%) with State School Trust Lands and private lands intermixed.

Access: Most of the lower elevations of this unit are accessible and quite a few roads do lead into the upper elevation areas. Access is limited in the more steep and rugged portions of the unit.

Fire Suppression Hazards: Open mine shafts occur in the Tintic Mountain portion of this unit, and densely forested areas are potential hazards.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Models 2 or 6, depending on crown closure and understory fine fuel loadings. Rates of spread are moderate. Fire occurrence is moderate. Lightning is the main source of ignition, although human-caused fires have occurred.

B-8 West Randolph Area:

Ecological Site Description: Annual precipitation averages 10 to 16 inches and slopes are generally 3 to 30 percent. Major ecological sites include Semi- Desert Loam, Semi-Desert Shallow Loam, Semi-Desert Stony Loam, Upland Stony Lam, Upland Shallow Loam, Semi-Desert Clay, Semi-Wet Meadow, Semi-Wet Streambank and Wet Fresh Streambank. Soils are mainly gravelly, silty, and clayey loams.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	45%	30%	15%

Vegetation: Vegetation in this unit is comprised of big sagebrush, black sagebrush, low sagebrush, rabbitbrush, and scattered juniper and serviceberry. Grasses are bluebunch wheatgrass and bluegrass. Forbs include phlox, Indian paintbrush, and others. Patches of quaking aspen and snowberry are found in drainages and on north and east aspects at higher elevations. Stands of lodgepole pine and Douglas fir occur at the upper elevations. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. Historic prescribed fires and spray projects have converted portions of this unit into large areas of crested wheatgrass and native grass vegetation types.

Natural Resources: Juniper stands in the unit provide critical deer thermal cover and most of the unit is crucial mule deer winter range. In addition, the unit is used extensively by pronghorn and occasionally by elk and moose. This area also provides important year round habitat for sage grouse. The sage grouse habitat consists of strutting grounds, nesting areas, and brood rearing areas scattered throughout the unit, and the blue grouse and roughed grouse also inhabit the unit. This is an important area for raptors including the ferruginous and Swainson's hawks (BLM, Utah, State Sensitive Species) as well as providing foraging and roost areas for the endangered bald eagle (October through March).

A number of perennial streams exist within the unit which have significant fisheries and other wildlife values.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to fishing, as well as in the fall during the various hunting seasons. Recreation use has increased at the Little Creek Campground, and snowmobiling and mountain biking are becoming more popular in this area.

Livestock Grazing: Summer and winter sheep grazing occurs May 5 through January 26, as well as spring and summer cattle grazing from May 10 through September 30.

Historic/Cultural Resources: Past cultural resource inventories have shown low site densities in this unit.

Urban Interface/Developments: This unit includes the rural communities of Randolph and Woodruff. There are also a number of rangeland developments such as fences, spring developments, corrals and other structures within the unit including a weather station. The Little Creek Campground and associated developments, are in this unit.

Land Status: This unit is a mix of BLM administered lands (96,458 acres, 34.2%), private lands, and scattered state lands. Mixed ownership with numerous small 40 acre blocks of private land are common in this unit.

Access: Numerous roads traverse the area and off-road access is good.

Fire Suppression Hazards: No hazards have been identified for this unit.

Fire Behavior: In areas dominated by sagebrush and scattered juniper, wildland fire behavior is best predicted by Fuel Models 2 or 6, depending on crown closure and understory fine fuel loadings. At higher elevations where lodgepole pine is found, Fuel Model 8 would be considered. Rates of spread are moderate. Fire occurrence is low. Both lightning and human-caused fires are common in this area.

B-9 Upper Randolph Creek Area:

Ecological Site Description: Annual precipitation averages 16 to 20 inches and slopes are generally 5 to 30 percent. Major ecological sites include Upland Shallow Loam, Upland Loam, Upland Clay, Upland Stony Loam, Semi-Wet Fresh Streambank, Mountain Gravelly Loam, Mountain Clay, Mountain Stony Loam, Mountain Windswept Ridge, and High Mountain Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	35%	45%	15%

Vegetation: Vegetation in this unit is comprised of big sagebrush, black sagebrush, mountain mahogany, serviceberry, and scattered juniper. Grasses are bluebunch wheatgrass and poas. Forbs include phlox, Indian paintbrush, and others. Upper elevations contain dense stands of quaking aspen, lodgepole pine, Douglas fir, alpine fir, and snowberry. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: Most of this unit is crucial mule deer, elk, and moose winter range, as well as habitat for pronghorn in the lower elevations of the unit. The area is also important yearlong habitat for sage grouse. The sage grouse habitat includes strutting grounds, nesting habitat, and brood rearing areas scattered throughout the unit. The unit also provides habitat for the blue grouse and roughed grouse.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to fishing, as well as in the fall during the various hunting seasons. Snowmobiling and mountain biking are also becoming more popular in this area.

Livestock Grazing: Cattle grazing occurs in this unit during the periods of May 15 through September 15, and sheep grazing from May 15 to June 14, and October 27 through December 17.

Historic/Cultural Resources: Past cultural resource inventories have shown low site densities in this unit. Cultural resource concerns are best dealt with on a site by site basis, rather than block approach.

Urban Interface/Developments: Improvements in this unit are limited to rangeland improvements such as fences and water developments.

Land Status: The unit contains mixed ownership, with BLM administered lands (11,271 acres, 3.5%), State School Trust lands, and private lands are also common in this unit.

Access: Access is good through most of this unit with the exception of steep terrain and forested areas.

Fire Suppression Hazards: The densely forested areas of this unit are potential hazards.

Fire Behavior: In areas dominated by sagebrush and scattered juniper, wildland fire behavior is best predicted by Fuel Models 2 or 6, depending on crown closure and understory fine fuel loadings. At higher elevations where dense quaking aspen and Douglas fir stands are found, Fuel Model 8 may be a better predictor of fire behavior. Rates of spread are moderate. Fire occurrence is low. Both lightning and human-caused fires have occurred in this area.

B-10 Crawford Mountains and Woodruff Creek Areas:

Ecological Site Description: Annual precipitation averages 10 to 14 inches and slopes are generally 5 to 50 percent. Major ecological sites include Semi-Desert Loam, Semi-Desert Shallow Loam, Upland Shallow Loam, Upland Stony Loam, Semi-Desert Very Steep Shallow Loam, Upland Very Steep Shallow Loam, and Upland Very Steep Stony Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	60%	30%	0%

Vegetation: Vegetation in this unit is comprised of big sagebrush, black sagebrush, greasewood, low rabbitbrush, bitterbrush, scattered juniper, Douglas fir (Crawford Mountains portion of unit) and serviceberry. Grasses are bluebunch wheatgrass, thickspike wheatgrass and Sandburg bluegrass. Forbs include phlox, Indian paintbrush, and others. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit includes some of the most critical mule deer winter range in Rich County as well as important habitat for pronghorn. The area is also utilized by elk and moose in winter, and occasionally in summer. The area provides year round habitat for sage grouse. The sage grouse habitat includes strutting grounds, nesting habitat, and brood rearing areas. The steep, west facing slope of the Crawford Mountains is utilized extensively by raptors for nesting and roosting. The burrowing owl occurs in the unit and is a BLM, Utah, State Sensitive Species. An important bald eagle (an endangered species) roost site occurs in this area. This entire unit provides important habitat for foraging, roosting, and nesting by a number of raptor species.

Double-needle pinyon pine occurs on the tops of the Crawford Mountains. This is a unique species to Utah.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing, camping, and fishing, as well as in the fall during the various hunting seasons. Recreation in the Birch Creek Campground area is of higher density and lasts from spring through fall.

Livestock Grazing: Spring and summer cattle grazing occurs in the Crawford Mountain area May 16 through September 15, and spring and winter sheep use occurs in the Woodruff Creek area during May 16 through May 31, and November 1 through January 13.

Historic/Cultural Resources: Past cultural resource inventories have shown low site densities in this unit.

Historic mining sites are found on the Crawford Mountains.

Urban Interface/Developments: Improvements, including residences on adjacent lands, occur in several areas within this unit, especially along the west side of the Crawford Mountains where several ranches exist. There are also a number of rangeland developments such as fences, spring developments, corrals and other structures within the unit.

Land Status: The majority of the unit is BLM administered lands (33,287 acres, 71%), with mixed ownership of State School Trust lands and private lands associated with mining claims in this unit.

Access: A few roads traverse the top and eastern portions of the Crawford Mountains and off-road access is fair. In areas of steeper terrain (west slope of the Crawford Mountains) and dense juniper areas, the access is quite limited.

Fire Suppression Hazards: Mining hazards, including open slopes and collapsing mine shafts (slumps), are present in this unit, and densely forested areas also are a potential hazard.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 6. Rates of spread are moderate. Fire occurrence is low. Both lightning and human-caused fires have occurred in this unit.

B-11 Neponset Reservoir Area:

Ecological Site Description: Annual precipitation averages 10 to 12 inches and slopes are generally 1 to 10 percent. Major ecological sites include Semi-Desert Loam, Semi-Desert Clay, Semi-Desert Stony Loam, Alkali Bottom and Semi-Desert Shallow Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	30%	60%	5%

Vegetation: Vegetation in this unit is comprised of big sagebrush, black sagebrush, greasewood, low rabbitbrush, and scattered juniper and serviceberry. Grasses are bluebunch wheatgrass, Sandburg bluegrass, and western wheatgrass. Forbs include phlox, Indian paintbrush, and others. A few crested wheatgrass seedings also exist in the unit. Upper elevation riparian areas include quaking aspen and other deciduous trees. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit is crucial mule deer and elk winter range as well as important year round habitat for pronghorn. The area is also very important sage grouse habitat. The sage grouse habitat includes strutting grounds, nesting habitat, and brood rearing areas. The bald eagle, an endangered species, inhabits the area during the winter.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing as well as in the fall during the various hunting seasons. This unit includes a "Watchable Wildlife Area" near Deseret Land and Livestock for viewing elk and other wildlife, as well as the Woodruff Wildlife/Livestock Cooperative Management Area (also a "Watchable Wildlife Area," both of which attract recreationists to this area.

Livestock Grazing: This area is grazed by cattle and sheep from May 1 through November 15.

Historic/Cultural Resources: Past cultural resource inventories have shown low site densities in this unit..

Urban Interface/Developments: Bordering this unit to the east is a housing development located on the Wyoming side of Murphy Ridge. To the west of the unit is Home Ranch, the headquarters for Deseret Land and Livestock. Various rangeland improvements also exist in this unit.

Land Status: Most of this unit is private lands owned by Deseret Land and Livestock, with mixed ownership of BLM administered lands (17,924 acres, 7.5%) and State School Trust Lands, occurring in a checkerboard pattern.

Access: Vehicle access is good through most of this unit. There are several areas where locked gates on private land block access.

Fire Suppression Hazards: There is a potential hazard associated with a hydrogen sulphide pipeline which runs through this unit.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 6. Rates of spread are moderate. Fire occurrence is low. Both lightning and human-caused fires occur in this area.

B-12 Upper Elevation Parcels in Utah, Summit, Morgan, Weber, Cache and Wasatch Counties:

Ecological Site Description: Annual precipitation averages 16 to 25 inches and slopes are generally 5 to 80 percent. Major ecological sites include Upland Loam, Upland Stony Loam, Upland Shallow Loam, Upland clay, Mountain Gravelly Loam, Mountain Clay, Mountain Stony Loam, and Mountain Windswept Ridge.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	0%	100%	0%

Vegetation: These isolated parcels of BLM lands are characterized by quaking aspen, Douglas fir, mountain mahogany, cliffrose, bitterbrush, gambel oak, serviceberry, snowberry, chokecherry, and big sagebrush with understories of mountain brome and bluebunch wheatgrass. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Clay scorpionweed (Phacelia argillacea) is an important plant found near BLM lands in the upper portion of Spanish Fork Canyon.

Natural Resources: Significant wildlife resource values exist on these lands. Most of the lands are considered crucial winter range for mule deer, elk, and moose as well as providing year round habitat for these species. These parcels are also important upland game habitat for sage grouse, blue grouse, roughed grouse, and chukars. Many of these lands are forested and provide habitat for a diversity of non-game wildlife species. The bald eagle, an endangered species, makes use of these lands for foraging as well as roosting during the winter.

Rivers and streams occur throughout this unit, and provide habitat for several species of fish, as well as important habitat for a variety of other wildlife species, including the river otter, a BLM, Utah, State Sensitive Species.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing, camping, and fishing, as well as in the fall during the various hunting seasons.

Livestock Grazing: These lands are isolated tracts of BLM administered lands, many of which are likely grazed in conjunction with grazing on surrounding private lands.

Historic/Cultural Resources: Historic mining activity is present in some of the isolated parcels around Park City.

Urban Interface/Developments: The properties adjacent to these small parcels of BLM administered lands are private land, many of which have homes and other developments.

Land Status: In these areas BLM administered lands (15,120 acres, 1.5%) are widely scattered isotracts and form a small percent of the lands, compared to Forest Service, private, and state lands.

Access: Access into much of this area is limited by locked gates on private lands, steep slopes, and forested areas.

Fire Suppression Hazards: Hazards in this unit include the densely forested areas, steep terrain, and structures.

Fire Behavior: Fire behavior in this unit is best predicted by Fuel Model 8 where Douglas fir and/or quaking aspen exist. Rates of spread in these fuels are moderate. Fire occurrence in this unit is extremely low. Potential for both lightning and human caused fires exist.

B-13 Wetland Management Areas:

Ecological Site Description: Annual precipitation averages 8 to 12 inches and slopes are generally 0 to 3 percent. Major ecological sites in this unit are Desert Salty Silt, Alkali Flats and Semiwet Alkali Flats.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	5%	15%	75%

Vegetation: This unit includes the Salt Wells Wildlife Habitat Area (WHA), Blue Springs WHA, Horseshoe Springs WHA, Clover Creek Reservoir, Powell Slough, and other areas around Utah Lake, and a small area around Rush Lake. The unit also includes the various State Waterfowl Management Areas on the east side of the Great Salt Lake. The vegetation in the unit on non-wetland areas include desert and semi-desert plants such as greasewood, shadscale, big sagebrush, kochia, phlox, Indian ricegrass, squirreltail, and cheatgrass. Wetland areas include the plant species salicornia, pickleweed, salt grass, bulrush, and cattails. Phragmites can also be found in some of these areas. In both areas, associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: These wetland areas provide habitat for a multitude of shorebird and waterfowl species, along with sage grouse, sharp-tailed grouse, and many other non-game species of wildlife in the more upland portions of the unit. These areas are important for migration as well as for nesting and brood rearing for the shorebirds and waterfowl. Pronghorn and mule deer make use of these wetland areas. The endangered bald eagle and peregrine falcon inhabit these areas. The kit fox, another species of concern, also inhabits a few of these areas.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer with hiking, biking, fishing, and bird watching, as well as in the fall during the waterfowl hunting season. This unit includes portions of the Central Pacific Railroad Grade which has been designated as the Transcontinental National Back Country Byway. High recreation use occurs in this area.

Livestock Grazing: Many of the wetlands in this unit are closed to grazing. In the BLM administered wetland areas cattle grazing occurs in winter and early spring.

Historic/Cultural Resources: Cultural resource concerns are identified in the Salt Wells, Blue Springs, and Horseshoe Springs WHA's. The Union Pacific and Central Pacific Railroad Grades pass through the Salt Wells WHA. The Bartleson-Bidwell Trail passes through portions of the Salt Wells WHA. Associated with the Central Pacific Railroad Grade in the Salt Wells WHA are the former town sites/sidings of West Kosmo, East Lake, and West Lake. The Central Pacific Railroad Grade also passes through the Blue Springs WHA. The Blue Springs WHA also includes the sidings of Blue Creek and Conner. It may also contain evidence of worker's camps dating from the initial construction of the railroad grades. The Horseshoe Springs WHA contains a concentration of prehistoric sites.

Urban Interface/Developments: Improvements in this unit include gas lines, power lines, fiber optic cables, and fences. Several isolated ranches occur within or adjacent to this unit.

Land Status: This area consists of BLM administered lands (56,254 acres, 18.8%) in association with scattered State School Trust Lands and private lands.

Access: Most terrain is flat with some road access. Off-road access is limited due to the wetland nature of the sites.

Fire Suppression Hazards: Hazards in these areas include power lines, Chevron pipelines, fiber optic cables at Blue Springs and Salt Wells. No hazards have been identified for the other areas.

Fire Behavior: Wildland fire behavior in the desert shrub areas of this unit, is best predicted by Fuel Model 2. Rates of spread are moderate. Fire occurrence is low. Lightning is the main source of ignition, although human-caused fires have occurred. The wetland fuel type for wildland fire behavior is best predicted by Fuel Model 3. Areas of primarily cheatgrass would fit Fuel Model 1. Rates of spread in this fuel type can be low to explosive depending on fuel moisture and burning conditions.

C-1 North Deep Creek Range Area:

Ecological Site Description: Annual precipitation averages 16 to 25 inches and slopes are generally 10 to 60 percent. Major ecological sites are Upland Loam, Mountain Shallow Loam, Gravelly Loam, and Stony Loam. The soils are generally well drained, rocky, and gravelly with major zones of limestone and quartzite.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
5%	25%	40%	30%

Vegetation: Vegetation in this unit is primarily comprised of juniper, big sagebrush, cliffrose, bitterbrush, mountain mahogany, Douglas fir, Englemann spruce, white fir, limber pine, bristlecone pine, chokecherry, pinyon, quaking aspen, and bluebunch wheatgrass. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit includes the Deep Creek Wilderness Study Area (WSA). This unit also includes lands that have been proposed for wilderness designation by special interest groups.

The area serves as spring, summer and fall range for mule deer, elk, and bighorn sheep. This unit is also a high chukar use area. Raptor use is also important in this area.

Kass rockcress (Draba kassii) and Deep Creek stickseed (Hackelia ibapensis) are BLM, Utah, State Sensitive Species which occur within this unit on the eastern portion of the Deep Creek Mountains. The former plant occurs on the Prospect Quartzite

parent material growing in rock crevices and in the shade of other plants. The latter species has been found within Goshute Canyon and is very rare.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing, hiking, and camping, as well as in the fall during the various hunting seasons.

Livestock Grazing: Cattle grazing is limited to the lower elevations of this unit during the periods of May 15 through September 30, and November 1 through April 30.

Historic/Cultural: Cultural resource concerns for this unit include historic mining structures. The portion of the Deep Creek Range in Juab County is known to contain significant prehistoric sites and unique site types such as heliograph stations. Similar sites may occur within this unit.

Urban Interface/Developments: The upper elevations of the Deep Creek Range have had minimal impact by humans. The only developments in this unit are mining structures in Art's Canyon and Goshute Canyon.

Land Status: The majority of this unit is BLM administered lands (39,102 acres, 86.6%), with scattered State School Trust Lands and a small parcel of private land, also occurring in the unit.

Access: Access into this unit is very limited due to road closures, lack of roads, and steep, rough terrain.

Fire Suppression Hazards: Steep terrain and dense, forested areas present hazards in this unit.

Fire Behavior: Typically, wildland fire behavior in this unit is best predicted by Fuel Model 8. Rates of spread are low to moderate. Fire occurrence is low. Historically, lightning has been the only fire cause in this area.

C-2 Pilot Range Area:

Ecological Site Description: Annual precipitation averages 8 to 20 inches and slopes are generally 20 to 60 percent. Major ecological sites are Upland Loam, Mountain Shallow Loam, Gravelly Loam, and Stony Loam. The soils are generally well drained, rocky, and gravelly.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	25%	50%	15%

Vegetation: Vegetation in this unit is characterized by juniper, pinyon, bitterbrush, mountain mahogany, Douglas fir, and quaking aspen, and bluebunch wheatgrass. Upper elevation sites that have been burned in the past, are now predominantly bluebunch wheatgrass, spike king fescue, and wooly mullein. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This unit includes lands that have been proposed for wilderness designation by special interest groups.

The Pilot Range provides habitat for mule deer, elk, and Rocky Mountain bighorn sheep as well as limited use by pronghorn in the lower elevations of the unit. Upland game birds such as the blue grouse, sage grouse, chukar, and Hungarian partridge also inhabit this area. The area is also important as raptor nesting habitat.

Cottam cinquefoil (Potentilla cottamii), a BLM, Utah, State Sensitive plant species, occurs within this unit south of Patterson Pass.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing, as well as in the fall during the various hunting seasons and pine nut gathering season in October.

Livestock Grazing: Summer cattle grazing use occurs in the area at lower elevations. In some open areas, like Patterson Pass, cattle grazing occurs to the top of the range. The season of use is May 10 through November 15.

Historic/Cultural: Cultural Resource concerns for this unit include historic mining activity north of Patterson Pass. This includes the remains of a historic tramway on Copper Mountain. Prehistoric sites have been identified in many areas in this unit.

Urban Interface/Developments: Improvements which exist in this unit include a radio communications site at the north end of the range, some mining structures (most around Copper Mountain), and the towers of the historic tramway on the west side of Copper Mountain.

Land Status: A major portion of this unit is BLM administered lands (27,122 acres, 66.3%) with scattered State School Trust Lands and private lands intermixed.

Access: A few roads access portions of this unit in the Rhyolite Butte, Copper Mountain and Patterson Pass areas. Other than these roads, this area is quite inaccessible due to steep, and rocky terrain.

Fire Suppression Hazards: Mining hazards, including open pits and shafts, may be present on the north end of this unit. Steep, rocky, broken terrain is also a potential hazard.

Fire Behavior: Wildland fire behavior in the vegetation dominated by juniper within this unit is best predicted by Fuel Model 2 or 6 depending on the amount of crown closure and understory fine fuel loadings. Douglas-fir stands would fit Fuel Model 8. Rates of spread are moderate. Fire occurrence is low. Lightning is the primary cause of fires in this area.

C-3 Cedar Mountains Area:

Ecological Site Description: Annual precipitation averages 10 to 17 inches and slopes are generally 10 to 40 percent. Major ecological sites are Semi-Desert Loam, Semi-Desert Gravelly Loam, Semi-Desert Shallow Loam, Semi-Desert Shallow Hardpan, Semi-Desert Very Shallow Loam, Semi-Desert Very Steep Shallow Loam, Upland Shallow Hardpan, Upland Stony Loam, Upland Shallow Loam and Upland Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
30%	35%	25%	10%

Vegetation: Vegetation within this unit is primarily juniper with scattered big sagebrush, black sagebrush, and a mixed understory of bluebunch wheatgrass, and other perennial and annual grasses. Desert and semi-desert shrub communities also occur in the low elevations of the unit. Cheatgrass invasion is a concern around the lower elevation perimeters of this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species..

Natural Resources: A large portion of this unit is a designated Wilderness Study Area (WSA). This unit also includes lands that have been proposed for wilderness designation by special interest groups.

This area is year round mule deer range as well as year round pronghorn range in the lower elevations of the unit. Chukars also inhabit the area. Raptor use is also important in this area.

This unit is also part of the Cedar Mountain Wild Horse Management Area and provides year round range for mule deer.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing as well as in the fall during the various hunting seasons.

Livestock Grazing: The Cedar/Skull Valley grazing allotment is within this unit and is used for both cattle and sheep winter and spring range with grazing occurring between November 1 and April 30.

Historic/Cultural Resources: High concentrations of prehistoric sites are known from areas within this unit. The Hastings Cutoff passes through this unit.

Urban Interface/Developments: Improvements in this unit include mining structures, as well as range and wildlife improvements (i.e.: fences, troughs, guzzlers, etc.).

Land Status: This area is mainly BLM administered lands (94,919 acres, 88%) with scattered private sections in the north portion of the unit.

Access: Much of the lower elevation areas are accessible but access is limited in the upper elevations of this unit.

Fire Suppression Hazards: Portions of this unit form a border with Dugway Proving Grounds. No additional hazards have been identified for this unit.

Fire Behavior: Lower elevation sagebrush with grass understory would best be predicted by Fuel Model 6. Juniper sites within this unit are best predicted by Fuel Model 2 or 6 depending on amount of crown closure and understory fine fuel loadings. Rates of spread are moderate. Fire occurrence is high. Lightning is the primary cause of fires, but historically human-caused fires have occurred as well.

C-4 Stansbury Mountain Area:

Ecological Site Description: Annual precipitation averages 10 to 25 inches and slopes are generally 2 to 100 percent. Major ecological sites include Semi-Desert Loam, Semi-Desert Alkali Loam, Semi-Desert Gravelly Loam, Upland Loam, Upland Shallow Loam, Upland Stony Loam, Mountain Stony Loam, Mountain Loam, and Mountain Gravelly Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
20%	30%	25%	25%

Vegetation: Vegetation within this unit is primarily juniper with scattered sagebrush, cliffrose, and a mixed understory of bluebunch wheatgrass and other perennial and annual grasses. Upper elevation areas include bitterbrush, Douglas fir, and mountain mahogany. Some patches of remnant black sagebrush are present at lower elevations. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: A portion of this unit is designated as the North Stansbury Mountains Wilderness Study Area (WSA). This unit also includes lands that have been proposed for wilderness designation by special interest groups.

This unit contains crucial mule deer winter range in the Salt Mountain and Clover Creek Areas. Elk also inhabit portions of this unit. Upland game birds include the blue grouse and historical sage grouse use. The area is utilized by raptors, including the bald eagle, an endangered species, for foraging and roost sites.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing, hiking, and camping, as well as in the fall during the various hunting seasons.

Livestock Grazing: The upper portions of this unit have little or no grazing, with the lower and mid areas of the unit being grazed by cattle during the months of May 1 through October 15.

Historic/Cultural Resources: Cultural resources are known to occur in this unit. Past cultural resource inventories have shown low site densities in this unit. Cultural resource concerns are best dealt with on a site-by-site basis, rather than a block approach.

Urban Interface/Developments: This unit is adjacent to private lands, on the west and especially on the east side of the unit, where improvements include residential properties, commercial businesses, mining structures, and other improvements (i.e.: fences, troughs, guzzlers, etc.).

Land Status: The majority of this unit is BLM administered lands (39,925 acres, 70.7%) with areas of substantial private lands and widely scattered State School Trust lands.

Access: Access into this unit is very limited.

Fire Suppression Hazards: Hazards include steep, rugged terrain, limited access, and densely forested areas.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 2 or 6 depending on the amount of crown closure and understory fine fuel loadings. Douglas fir sites at the highest elevations would best be predicted with Fuel Model 8. Rates of spread are moderate. Fire occurrence is high. Lightning is the primary cause of fires, but historically human-caused fires have occurred as well.

C-5 Onaqui and North Simpson Mountain Areas:

Ecological Site Description: Annual precipitation averages 11 to 20 inches and slopes are generally 3 to 30 percent. Major ecological sites include Desert Flat, Semi-Desert Alkali Loam, Semi-Desert Loam, Semi-Desert Gravelly Loam, Semi-Desert Stony Loam, Semi-Desert Sandy Loam, Semi-Desert Sand, Upland Shallow Hardpan, Upland Stony Loam, Upland Shallow Loam, Upland Loam, Mountain Stony Loam, Mountain Gravelly Loam, and Mountain Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
20%	45%	30%	5%

Vegetation: Vegetation within this unit is primarily juniper with scattered big sagebrush, black sagebrush, cliffrose, bitterbrush, and a mixed understory of bluebunch wheatgrass and annual grasses. Cheatgrass invasion has occurred in the lower elevations of this unit. Douglas fir and mountain mahogany are found in the upper elevations of this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: This area is winter range and year round range for mule deer. Upland game birds include the sage grouse, blue grouse, and chukar. Many raptors inhabit this area including the ferruginous and Swainson's hawks, both BLM, Utah, State Sensitive Species. These raptors nest in the scattered juniper areas of the unit. The area is also inhabited by the bald eagle, an endangered species, which utilizes the area for foraging and roosting.

This unit contains the Onaqui Mountains Wildhorse Management Area.

The unit also contains areas where woodland products, such as firewood and juniper posts, are made available to the public.

Recreation: In general, dispersed recreation occurs in this area with increased use during the summer related to sightseeing, hiking, and mountain biking, as well as in the fall during the various hunting seasons. Increased recreation occurs in the area around the Clover Spring Campground as well as along the Pony Express/Overland Stage Route, which has been designated the Pony Express Trail National Back Country Byway.

Livestock Grazing: These areas are grazed in the summer by cattle during the period of May 1 through October 15.

Historic/Cultural Resources: The Pony Express/Overland Stage Route passes through this unit. Aunt Libby's Pet Cemetery is an interpretive site associated with the Pony Express Route in the Onaqui Mountains. Prehistoric sites occur in both isolation and in clusters in the Onaqui Mountains and on the margins of the North Simpson Mountains. The remains of an historical CCC camp exists at Clover Spring.

Urban Interface/Developments: Improvements in the unit include adjacent residential properties, commercial businesses, mining structures, and other improvements (i.e.: fences, troughs, guzzlers, corrals, etc.).

Land Status: The majority of the unit is BLM administered lands (76,033 acres, 73.4%) with intermixed State School Trust Lands and private lands.

Access: Access is quite good into the foothills of these areas but very limited in the upper elevations where there are few roads and steep, rough terrain.

Fire Suppression Hazards: Potential exists for rapid fire movement and severe fire conditions in the dense juniper areas within this unit.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 2 or 6 depending on the amount of crown closure and understory fine fuel loadings. Rates of spread are moderate. Fire occurrence is high. Lightning is the primary cause of fires, but historically human-caused fires have occurred as well.

C-6 Dugway Range (Including Former Military Use) Area:

Ecological Site Description: Annual precipitation averages 5 to 8 inches and slopes are generally 0 to 30 percent. Ecological sites are mainly Desert Alkali Flat, Desert Salty Silt, Desert Alkali Bench, Desert Flat, Desert Loam, Desert Gravelly Loam, Semi-Desert Gravelly Loam, and Semi-Desert Shallow Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
10%	25%	55%	10%

Vegetation: Vegetation within this unit is primarily juniper, cliffrose, and desert shrub species characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, sand dropseed, and cheatgrass. A variety of annual forbs occur in the unit. Juniper trees are very scattered with heavier concentrations at the upper elevations of this unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. This area is considered valuable for it's relatively pristine vegetation diversity and composition.

Natural Resources: A large portion of this area includes lands that have been proposed for wilderness designation by special interest groups.

A few mule deer inhabit the unit and pronghorn utilize the lower elevations of the unit. Chukars also inhabit the area. A variety of raptors inhabit the unit including the ferruginous hawk, a BLM, Utah, State Sensitive Species. The kit fox is another species of concern which inhabits the low elevations of this unit.

Recreation: High recreation use is made at the geode beds within this unit. Otherwise, recreation is dispersed with increased use during the spring, summer, and fall.

Livestock Grazing: This area is winter and spring sheep range, with grazing occurring from November 1 through April 25.

Historic/Cultural Resources: Historic mining activity is present in the northern portion of the range.

Most of the large mines are on patented claims, however, some prospecting activity (shafts, adits) occurs on BLM managed lands.

Urban Interface/Developments: Developments in this unit consist of mining structures and a few rangeland improvements.

Land Status: This unit is predominantly BLM administered lands (23,338 acres, 84%) with a few State School Trust Lands and private lands.

Access: Access around the perimeter of the unit is good as well as the north end of the unit near the patented mining claims. The upper elevations of this unit are inaccessible other than by foot.

Fire Suppression Hazards: The Yellow Jacket mining area on the north end of Dugway Range; Potential for unexploded ordnance exists throughout this area, as well as potential chemical weapons contamination.

Fire Behavior: Wildland fire behavior in this desert shrub type is best predicted by Fuel Model 2. Higher elevations have scattered juniper and is best predicted by Fuel Model 2 or 6 depending on the amount of crown closure and understory fine fuel loadings. Rates of spread in this unit are low to moderate. Fire occurrence is relatively low. Lightning has traditionally been the source of ignitions in this area.

C-7 Old River Bed (Former Military Use) Area:

Ecological Site Description: Annual precipitation averages 5 to 6 inches and slopes are generally 0 to 2 percent. Major ecological sites are Desert Alkali Bench, Desert Flat, Desert Oolitic Dunes, Desert Gravelly Loam, and Desert Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	50%	50%	0%

Vegetation: The dominant vegetation type in this unit is desert shrubs characterized by greasewood, shadscale, fourwing saltbush, Gardner saltbush, horsebrush, ephedra, winterfat, kochia, rabbitbrush, snakeweed, black sagebrush, and small areas of big sagebrush. Grasses consist of Indian ricegrass, galleta grass, needle-and-thread grass, squirreltail, and cheatgrass. A variety of annual forbs occur in the unit. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species. This area has been impacted by fire in the past which has converted much of the area to cheatgrass and other annuals.

Natural Resources: The pronghorn inhabits this area throughout the year. Several raptor species, including the ferruginous hawk and burrowing owl, both BLM, Utah, State Sensitive Species, also inhabit the area. The kit fox is also a species of concern which inhabits the unit.

Recreation: Dispersed recreation occurs in this area.

Livestock Grazing: Winter and spring sheep use occurs in this unit from November 1 through April 30.

Historical/Cultural: Limited cultural resource inventories have been conducted in this unit. Low site densities are expected.

Urban Interface/Developments: Other than a few range improvements very little development has occurred in this unit.

Land Status: This area is BLM administered lands (8,203 acres, 92.7%) with the exception of a single State School Trust Land section.

Access: A few roads exist in the unit but access is limited due to the constraints listed below.

Fire Suppression Hazards:, Area referred to by the military as the Southern Triangle area which is the area surrounding the Rising Sun grid and is located around the area where the old river bed crosses the southern boundary of the Dugway Proving Ground; Potential for unexploded ordnance exists throughout this area, as well as potential chemical weapons contamination.

Fire Behavior: Wildland fire behavior in this desert shrub type is best predicted by Fuel Model 2. Rates of spread in this unit are low to moderate. Fire occurrence is relatively low. Lightning has traditionally been the source of ignitions in this area.

C-8 Newfoundland Mountains Area:

Ecological Site Description: Annual precipitation averages 6 to 10 inches and slopes are generally 10 to 80 percent. Major Ecological sites include Semi-Desert Shallow Loam, Desert Loam, Desert Gravelly Loam and Rock Outcrop.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	0%	10%	90%

Vegetation: The primary vegetation type in this unit is juniper mixed with mountain mahogany, big sagebrush, black sagebrush, shadscale, cliffrose, spiny hopsage, and horsebrush with an understory of bluebunch wheatgrass and Salina wildrye. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: The majority of this unit includes lands that have been proposed for wilderness designation by special interest groups.

A few mule deer inhabit the unit. The Box Elder RMP identifies the area for the reintroduction of bighorn sheep which could take place in the near future. Chukar frequent this unit, as well as a variety of raptor species, including the ferruginous hawk, a BLM, Utah, State Sensitive Species. The kit fox is another species of concern which inhabits the low elevations of this unit.

Recreation: In general, light, dispersed recreation occurs in this area with increased use during the fall during the various hunting seasons.

Livestock Grazing: Historically this area has been grazed by winter sheep. This permit has been relinquished and no permitted livestock grazing occurs on this unit.

Historic/Cultural Resources: Historic mining structures are located in the northeast and central portions of the unit. Relatively few sites have been reported from this unit. However, significant prehistoric sites are known from adjacent lands and are likely to occur within this unit.

Urban Interface/Developments: Primary improvements are related to past and current mining activities.

Land Status: The majority of this unit is BLM administered lands (18,709 acres, 86.4%), with a few sections of State School Trust Lands scattered through the unit, as well as small scattered parcels of private lands related to patented mining claims.

Access: Very few roads access the interior of this unit and no roads access the upper elevations. With the exception of the extreme lower elevations of this unit, the area is inaccessible by vehicle. There is no access around the southern end of the unit due to fencing and a locked gate at the boundary of the North Test and Training Range.

Fire Suppression Hazards: Mine related hazards, including open shafts, are present in the unit. The unit borders the North Test and Training Range.

Fire Behavior: Wildland fire behavior in this unit is best predicted by Fuel Model 2 or 6 depending on the amount of crown closure and understory fine fuel loadings. Rates of spread in the unit are low to moderate depending on the years fine fuel loadings. Fire occurrence is low. Lightning is the main source of ignition.

D-1 Bonneville Basin Mudflat Area:

Ecological Site Description: Annual precipitation averages 4 to 7 inches and slopes are generally 0 to 3 percent. Major ecological sites in this unit include Desert Salty Silt, Alkali Flats and Semiwet Alkali Flats and Playa. Soils are mainly silty clay loams.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	0%	20%	80%

Vegetation: This unit is sparsely vegetated with species such as salicornia, pickleweed, kochia, and other salt tolerant plants.

Natural Resources: Portions of this unit may get sporadic waterfowl and shorebird use. Occasionally pronghorn move across the mud flats to access suitable habitat in other areas.

Recreation: In general, dispersed recreation occurs in this area with the exception of the Bonneville Salt Flats. Activities include sightseeing, camping, and OHV use.

Livestock Grazing: For the most part these lands are not suitable for grazing and livestock seldom utilize these lands.

Historic/Cultural Resources: Portions of this unit contain evidence of pioneer migration to California along the Hastings Cutoff. Most often this is in the form of faint wagon tracks. These resources are easily obliterated by OHV use. Sensitive areas include the area between Donner Spring and the Silver Island Range and Floating Island and the area west of Laidlaw's Grassy Mountain Hazardous Waste Landfill. Portions of the mudflat areas were also used extensively by the air force during and after the Second World War as bombing and strafing targets and as a missile test range. Clusters of prehistoric sites are also known to occur in portions of this unit.

Urban Interface/Developments: Few if any developments occur in this unit.

Land Status: This unit is a checkerboard ownership pattern of BLM administered lands (595,494 acres, 64%) State School Trust lands, and private lands.

Access: Access is very restricted in this unit due to the muddy conditions.

Fire Suppression Hazards: No hazards have been identified for this unit.

Fire Behavior: Due to the non-flammable nature of this unit no fuel model has been designated as representative of this unit.

D-2 Carrington and Cub Island Areas:

Ecological Site Description: Annual precipitation averages 7 to 9 inches and slopes are generally 5 to 30 percent. Major ecological sites are Desert and Semi-Desert Shallow Loam, Gravelly Loam, Alkali Bench, Loam, and Alkali Loam.

Ecological Status:

Early Seral	Mid Seral	Late Seral	Potential Natural Community
0%	100%	0%	0%

Vegetation: The primary vegetation on this small island is cheatgrass with small areas of desert shrub which include shadscale, horesbrush, ephedra, gray molly, black sagebrush, Indian ricegrass, squirreltail, and sand dropseed. Associations of these plants vary throughout the unit and vegetation in any given portion of the unit may consist of all the species mentioned above, mosaics of varying combinations of these species, or be limited to monotypic stands of one of the species.

Natural Resources: Other than the use of these islands by shorebirds and pelicans, few wildlife species inhabit these areas. Brine shrimp harvest activities have occurred on Carrington Island.

Recreation: Little if any recreation occurs on these lands.

Livestock Grazing: No livestock grazing occurs on these lands.

Historic/Cultural Resources: Carrington Island was used by the air force as a bombing target and is currently under investigation by the Army Corps of Engineers as a formerly used defense site (FUDS).

Urban Interface/Developments: No developments or improvements exist on these areas.

Land Status: Most of this unit is BLM administered lands (1,111 acres, 63.6%) with scattered State School Trust Lands and private lands.

Access: no vehicle access is available to these areas during high water levels of the Great Salt Lake. At low water levels, vehicle access to these sites is through a locked gate on private property or by boat.

Fire Suppression Hazards: This unit was used by the air force as a bombing target and is currently under investigation by the Army Corps of Engineers as a FUDS.

Fire Behavior: Fire behavior in this unit is best predicted by Fuel Model 1. Spread rates are moderate to high. Fire occurrence is low. Lightning is the main cause of fires in this unit.

APPENDIX B CALCULATION OF EXPANSION FACTOR FOR PROJECTED ACTUAL ACRES BURNED VERSUS TARGET OBJECTIVE ACRES

1994 FMAP Fire Management Target Acres**

FMZ and Fuel Type	# Fires	Annual Acres
FMZ 1 - Annual Grass with Desert Shrub	17.7	1,605
FMZ 2 - Sagebrush and Desert Shrub with Perennial Grasses	10.0	780
FMZ 3 - Juniper and Mountain Shrub with Perennial Grasses	20.2	5,771
Totals =	47.9	8,156

Historical Fire Occurrence for 1987-1996**

FMZ and Fuel Type	# Fires	Annual Acres
FMZ 1 - Annual Grass with Desert Shrub	17.5	24,355
FMZ 2 - Sagebrush/Desert Shrub with Perennial Grasses	6.1	1,586
FMZ 3 - Juniper and Mountain Shrubs with Perennial Grasses	25.6	8,169
Totals =	49.2	34,110

**NOTE - The statistics provided above are only for Fire Management Zones (FMZ) and fuel types analyzed for the 1994 Fire Management Activity Plan. Although these areas do not encompass the entire District they account for 91 percent of the fires during the period and the areas that provide the greatest amount of our burned acres.

Calculated Base Expansion Factors:

Formula -	Historical Burned Acres / Target Acres	= Base Expansion Factor
FMZ 1 =	24,355 acres per year / 1,605 acres per year	= 15.17
FMZ 2 =	1,586 acres per year / 780 acres per year	= 2.03
FMZ 3 =	8,169 acres per year / 5,771 acres per year	= 1.42

	Expansion Factor	Alternative 1		Alternative 2		Alternative 3		*Alternative 4		**Alternative 5	
Fire Management Zone 1	15.17	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual
		1600	24272	1195	18128	895	13577	5100	77367	405	6144
		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range	
		19418	26699	14503	19941	10862	14935	61894	85104	4915	6758
Fire Management Zone 2	2.03	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual
		1400	2842	1320	2680	1410	2862	6150	12484	350	710
		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range	
		2274	3126	2144	2948	2290	3149	9988	13733	568	782
Fire Management Zone 3	1.42	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual
		5775	8201	2160	3067	2680	3806	19110	27136	795	1129
		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range	
		6560	9021	2454	3374	3044	4186	21709	29850	903	1242
Total	N/A	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual	Objective Target	Projected Actual
		8775	35315	4675	23875	4985	20245	30360	116988	1550	7983
		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range		Burn Acre Range	
		28252	38846	19100	26262	16196	22270	93590	128686	6387	8782

*Note - Objectives for Alternatives 4 were based on professional judgement of the types of acres burned that might be anticipated in an "average" year under this type of suppression strategy.

** Note - Objectives for Alternative 5 were derived by taking 50 percent of the objective from the lowest value of all the other alternatives.

	Alternative 1 Current Management Fire and Vegetation Management	Alternative 2 Integreted Fire and Vegetation Management	Alternative 3 Maximum Fire and Vegetation Management	Alternative 4 Minimum Fire Suppression	Alternative 5 Maximum Fire Suppression
***Target Suppression Acreage Range per Year	7,000 to 9,650	3,750 to 5,150	4,000 to 5,500	24,300 to 3,3400	1,240 to 1,700
****Projected Actual Acres Burned per Year	28,252 to 38,846	19,100 to 26,262	16,196 to 22,270	93,590 to 128,686	6,387 to 8,782

***Note - Target Suppression Acreages for Alternative 1 Current Management were derived from the 1994 FMAP with an adjustment for Salt Lake District lands not originally considered in that analysis. Target Ranges were based on a single number multiplied by 80 percent to find the low end and multiplied by 110 percent to find the upper end. This was considered an acceptable range to achieve the objective target 90 percent of the time.

****Note - Projected Actual Acres Burned were based on multipling the objective for each fuel type or Fire Management Zone by the expansion factors calculated above. Then all fuel types or Fire Management Zones were totaled and the total value was multiplied by 80 and 110 percent to derive an exceptable range similar to the Target Suppression Acreages.

Vegetation Treatment

		Alternative 1	Alternative 2	Alternative 3	*Alternative 4	**Alternative 5
Fire Management Zone 1	Single Treated	1,000	2,000	2,400		
	1 year	2,000	2,000	5,400		
	5 year	6,000	7,000	12,800		
	10 year	9,000	13,000	20,900		
Fire Management Zone 2	Single Treated	500	1,440	2,040		
	1 year	900	2,080	43,605		
	5 year	2,200	10,790	15,390		
	10 year	3,200	21,020	28,620		
Fire Management Zone 3	Single Treated	500	2,230	4,730		
	1 year	500	3,300	7,700		
	5 year	900	6,100	20,800		
	10 year	1,200	10,450	31,100		
Total	Single Treated	2,000	5,670	9,170		
	1 year	3,400	8,380	17,460		
	5 year	9,100	23,840	48,990		
	10 year	13,400	44,470	80,620		

Fire Management Planning Areas (Polygons)

Polygon Label	Area (acres)			Wildfires (1987-96)	
	BLM	Total	BLM (%)	Number	Acres
A-1	211087	245223	86.08%	0	
A-2	97530	113276	86.10%	1	1000
A-3	611943	752028	81.37%	127	268863.5
A-4	1168	2235	52.26%	0	
A-5	206739	469161	44.07%	1	0.1
A-6	1444	347750	0.42%	0	
A-7	22900	28986	79.00%	0	
A-8	8738	28058	31.14%	3	85.1
A-9	13960	263549	5.30%	8	9866.2
A-10	33320	157998	21.09%	14	8.1
A-11	5567	8615	64.62%	2	3.1
A-12	25102	56140	44.71%	16	10377
A-13	10387	18230	56.98%	0	
A-14	28142	36464	77.18%	1	1
A-15	12625	19925	63.36%	12	9220.5
A-16	21173	28063	75.45%	7	4298.1
A-17	85093	131571	64.67%	21	10065.5
A-18	3301	292610	1.13%	1	500
A-19	367	27808	1.32%	0	
A-20	4842	387519	1.25%	0	
A-21	2381	783262	0.30%	1	8
B-1	59231	70238	84.33%	3	540.2
B-2	14639	28301	51.73%	0	
B-3	29052	144157	20.15%	4	35.6
B-4	169891	485614	34.98%	15	2637.8
B-5	212106	393152	53.95%	0	
B-6	62337	124155	50.21%	24	7946.8
B-7	79399	139171	57.05%	33	1293.5
B-8	96458	282040	34.20%	4	720.2
B-9	11271	318512	3.54%	0	
B-10	33287	46896	70.98%	3	102.1
B-11	17924	237599	7.54%	2	655
B-12	15120	997115	1.52%	1	45
B-13	56254	300093	18.75%	12	5350.8
C-1	39102	45160	86.59%	7	3833.4
C-2	27122	40892	66.33%	2	2274
C-3	94919	107834	88.02%	32	17067
C-4	39985	56550	70.71%	59	2639.7
C-5	76033	103651	73.35%	71	45224.2
C-6	23338	27778	84.02%	1	0.1
C-7	8203	8851	92.68%	1	40
C-8	18709	21666	86.35%	0	

D-1	595494	930315	64.01%	2	273
D-2	1111	1747	63.59%	0	
DOD	0	1825110	0.00%	0	
USFS	2049	3388142	0.06%	66	19493.2
BIA	0	17740	0.00%	6	598.4

APPENDIX C THREATENED, ENDANGERED, CANDIDATE, AND UTAH BLM SENSITIVE SPECIES

SPECIAL STATUS SPECIES

Wildlife includes all vertebrate animals and aquatic invertebrates within the boundaries of the Salt Lake District which are living in nature, excluding feral animals.

Status Codes	
Extinct	Any wildlife species which has disappeared from the world.
Extirpated	Any wildlife species that has disappeared from Utah since the year 1800.
E	Endangered Species - Any wildlife or plant species or subspecies which is threatened with extinction resulting from very low or declining numbers, alteration or reduction of habitat, detrimental environmental changes, or any combination of the above. Continued long-term survival is unlikely without implementation of special measures.
T	Threatened Species - Any wildlife or plant species or subspecies which is likely to become endangered in the near future, resulting from very low or declining numbers, alteration or reduction of habitat, detrimental environmental changes, or any combination of the above. Continued long-term survival is unlikely without implementation of special measures.
C-1	Candidate Species - Any wildlife or plant species for which the US Fish & Wildlife Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list the species as endangered or threatened species.
BLM,S	Utah BLM Sensitive Species - Any wildlife or plant species or subspecies that has a declining population, ie., has experienced a substantial decrease in population, distribution or habitat availability, or has a limited distribution, ie., occurs in limited areas and/or numbers due to a restricted or specialized habitat; or has both a declining population and a limited range throughout the state or portion of the state inhabited by the species. A management program including protection or enhancement is needed for these species to prevent the need for future listing of the species as threatened or endangered. The species within this category are included in the Utah Division of Wildlife Resources list of Special Status Species. Salt Lake District Sensitive Species (separate list) - Any wildlife or plant species or subspecies that has a declining population, ie., has experienced a substantial decrease in population, distribution or habitat availability, or has a limited distribution, ie., occurs in limited areas and/or numbers due to a restricted or specialized habitat, or has both a declining population and a limited range, within the Salt Lake District, which has not been included as a Utah BLM Sensitive Species, or is not a Candidate or listed species. Also included in this list are species which may be plentiful throughout the range of the species , but may only occur in limited areas within the district and therefore are unique to this area.

County Abbreviations- BE=Box Elder, C=Cache, D=Davis, M=Morgan, R=Rich, SL=Salt Lake, S=Summit, T=Tooele, U=Utah, W=Wasatch, and We=Weber

Threatened, Endangered, Candidate, and Utah BLM Sensitive Species

Common Name	Scientific Name	Status	County
Mammals			
1. Grizzly Bear	Ursus horribilis	Extirpated	R,S,W
2. Gray Wolf	Canis lupus	Extirpated	All
3. Fisher	Martes pennanti	Extirpated	R,S,W
4. Black-footed Ferret	Mustela nigripes	E	R,S
5. Wolverine	Gulo gulo	BLM, S	R,S
6. North American Lynx	Lynx canadensis	C-1	R,S,W
7. Northern River Otter	Lutra canadensis	BLM, S	BE,S
8. Ringtail	Bassariscus astutus	BLM, S	T,BE,
9. Marten	Martes americana	BLM, S	W,S,R
10. Pika	Ochotona princeps	BLM, S	W,S
11. Western Red Bat	Lasiurus borealis	BLM, S	All?
12. Big Free-tailed Bat	Tadarida macrotis	BLM, S	All?
13. Spotted Bat	Euderma maculatum	BLM, S	All?
14. Brazilian Free-tailed Bat	Tadarida brasiliensis mexicana	BLM, S	All?
15. Townsend's Big-eared Bat	Plecotis townsendii	BLM, S	All?
16. Dwarf Shrew	Sorex nanus	BLM, S	R,W,S,D,SL,M,U
17. Belding's Ground Squirrel	Spermophilus beldingi	BLM, S	BE
18. Richardson's Ground Squirrel	Spermophilus richardsonii	BLM, S	R,BE
19. Thirteen-lined Ground Squirrel	Spermophilus tridecemlineatus	BLM, S	R?
20. Northern Flying Squirrel	Glaucomys sabrinus	BLM, S	R,S,W
21. Yellow Pine Chipmunk	Eutamius amoenus	BLM, S	BE
22. Merriam's Kangaroo Rat	Dipodomys merriami	BLM, S	BE,T
23. Desert Kangaroo Rat	Dipodomys deserti	BLM, S	BE,T
Birds			
1. Passenger pigeon	Ectopistes migratorius	Extinct	All
2. Bald Eagle	Haliaeetus leucocephalus	T	All
3. Am. Peregrine Falcon	Falco peregrinus anatum	E	All
4. Arctic Peregrine Falcon	Falco peregrinus	T	All
5. Whooping Crane	Grus americanus	E	R,S
6. Osprey	Pandion Haliaetus	BLM, S	All
7. Ferruginous Hawk	Buteo regalis	BLM, S	R,T,U,
8. Swainson's Hawk	Buteo Swainsoni	BLM, S	All
9. Northern Goshawk	Accipiter gentilis	BLM, S	All
10. Western Burrowing Owl	Athene cunicularia hypugaea	BLM, S	BE,T,
11. Short-eared Owl	Asio flammeus	BLM, S	BE,T,
12. Columbian Sharp-tailed Grouse	Tympanuchus phasianellus Columbianus	BLM, S	BE
13. Sage Grouse	Centrocercus urophasianus	BLM, S	R,BE,S,T,U
14. Mountain Plover	Charadrius montanus	C-1	BE,D,S,T,W
15. Caspian Tern	Sterna caspia	BLM,S	BE,R
16. Black Tern	Chlidonias niger	BLM, S	BE,SL,D,R,
17. Long-billed Curlew	Numenius americanus	BLM, S	BE,SL
18. Yellow-billed Cuckoo	Coccyzus americanus	BLM, S	T,BE
19. Common Yellowthroat	Geothlypis trichas	BLM, S	All
20. Yellow-breasted Chat	Icteria virens	BLM, S	All?
21. Lewis' Woodpecker	Melanerpes lewis	BLM, S	All
22. Williamson's Sapsucker	Sphyrapicus thyroideus	BLM, S	All
23. Three-toed Woodpecker	Picoides tridactylus	BLM, S	All?
24. American White Pelican	Pelecanus erythrorhynchos	BLM, S	All?
25. Black Swift	Cypseloides niger	BLM, S	?
26. Grasshopper Sparrow	Ammodramus savannarum	BLM, S	All
Fish			
1. Utah Lake Sculpin	Cottus echinatus	Extinct	
2. Lahontan Cutthroat Trout	Onchorhynchus clarki henshawi	T	BE,W
3. June Sucker	Chasmistes liorus	E	U

4. Leatherside Chub	Gila copei	BLM, S	U
5. Least Chub	Iotichthys phlegethontis	C-1	BE,T
6. Bonneville Cutthroat Trout	Oncorhynchus clarki utah	BLM,S	R
Reptiles			
1. Utah Mountain Kingsnake	Lampropeltis pyromalena l.	BLM, S	U,T
2. Utah Milk Snake	Lampropeltis triangulum taylori	BLM, S	U,SL,W
3. Western Smooth Green Snake	Ophyodres vernalis blanchardi	BLM, S	R,C,W
Amphibians			
1. Relict Frog	Rana onca	Extinct	
2. Pacific Tree Frog	Hyla regilla	BLM, S	BE
3. Western Spotted Frog	Rana pretiosa	C-1	U,T,M,SL,S,W
4. Boreal Toad	Bufo boreas boreas	BLM, S	R,W,S,U,C,D,BE,SL
Mollusks			
1. Utah Physa (Bubble Snail)	Physell utahensis	BLM, S	U
2. Fat-whorled Pondsnail	Stagnicola bonnevillensis	C-1	BE
3. Eureka Mountain Snail	Oreohelix eurekensis eurekensis	BLM, S	T
4. Ogden Rocky Mountain Snail	Oreohelix peripherica wasatchensis	C-1	W
5. Utah Valvata Snail	Valvata utahensis	T	U
Plants			
1. Passey's Onion	Allium passeyi	BLM, S	BE
2. Grouse Creek Rockcress	Arabis falcatoria	BLM, S	BE
3. Grouse Creek Milkvetch	Astragalus anserinus	BLM, S BE	
4. Deseret Milkvetch	Astragalus desereticus	C-1	U
5. Pohl's Milkvetch	Astragalus lentiginosus var. Pohlii	BLM, S	T
6. Giant Four-wing Saltbush	Atriplex canescens var. Gigantea	BLM, S	T
7. Mound Cryptantha	Cryptantha compacta	BLM, S	T
8. Kass Rockcress	Draba kassii	BLM, S	T
9. Cronquist Daisy	Erigeron Cronquistii	BLM, S	C
10. Deep Creek Stickseed	Hackelia ibapensis	BLM, S	T
11. Idaho Penstemon	Penstemon idahoensis	BLM, S	BE
12. Clay Phacelia	Phacillia argillacea	E	U
13. Cotton Cinquefoil	Potentilla cottamii	BLM, S	BE
14. Maguire Primrose	Primula magiuurei	T	C,
15. Ute Lady's Tresses	Spiranthes diluvialis	T	SL, W,T,We,U
16. Violet	Viola lithion	BLM, S	?

*Species listed above inhabit lands within the Salt Lake District, but may or may not inhabit BLM lands. The occurrence data by county is incomplete.

Threatened, Endangered, Candidate, and Utah BLM Sensitive Species Listed by Habitat Type

Alpine, Tundra, Aspen, Spruce-Fir

Grizzly Bear	Ursu horribilis
Wolf	Canis lupus
Wolverine	Gulo gulo
Fisher	Martes pennanti
North American Lynx	Lynx canadensis
Northern River Otter	Lutra canadensis
Marten	Martes americana
Pika	Ochotona princeps
Northern Flying Squirrel	Glaucomys sabrinus
Yellow Pine Chipmunk	Eutamius amoenus
Dwarf Shrew	Sorex nanus
Bald Eagle	Haliaeetus leucocephalus
Northern Goshawk	Accipiter gentilis
Arctic Peregrine Falcon	Falco peregrinus
Sage Grouse	Centrocercus urophasianus
Osprey	Pandion Haliaetus
Mountain Plover	Charadrius montanus
Utah Mountain Kingsnake	Lampropeltis pyromalena l.
Utah Milk Snake	Lampropeltis triangulum taylori
Boreal Toad	Bufo boreas boreas
Grouse Creek Rockcress	Arabis falcatoria
Maguire Primrose	Primula maguirei
Cotton Cinquefoil	Potentilla cottamii
Cronquist Daisy	Erigeron Cronquistii
Deep Creek Stickseed	Hackelia ibapensis
Ute Lady's Tresses	Spiranthes diluvialis

Pinyon, Juniper, Sagebrush/Grassland, Mountain Brush

Ringtail	Bassariscus astutus
Black-footed Ferret	Mustela nigripes
Northern River Otter	Lutra canadensis
Dwarf Shrew	Sorex nanus
Richardson's Ground Squirrel	Spermophilus richardsonii
Bald Eagle	Haliaeetus leucocephalus
Arctic Peregrine Falcon	Falco peregrinus
Osprey	Pandion Haliaetus
Ferruginous Hawk	Buteo regalis
Swainson's Hawk	Buteo swainsni
Burrowing Owl	Athene cunicularia hypugaea
Columbian Sharp-tailed Grouse	Tympanuchus phasianellus Columbianus
Sage Grouse	Centrocercus urophasianus
Yellow-billed Cuckoo	Coccyzus americanus
Lewis Woodpecker	Melanerpes lewis
Western Bluebird	Sialia mexicana
Boreal Toad	Bufo boreas boreas
Utah Mountain Kingsnake	Lampropeltis pyromalena l.
Utah Milk Snake	Lampropeltis triangulum taylori
Western Smooth Green Snake	Ophyodres vernalis blanchardi
Grouse Creek Milkvetch	Astragalus anserinus
Deseret Milkvetch	Astragalus desereticus
Kass's Whitlow-grass	Draba kassii
Grouse Creek Rockcress	Arabis falcatoria

Clay Phacelia	Phacillia argillacea
Idaho Penstemon	Penstemon idahoensis
Maguire Primrose	Primula magiuurei
Ute Lady's Tresses	Spiranthes diluvialis
Cronquist Daisy	Erigeron Cronquistii

Desert Shrub

Ringtail	Bassariscus astutus
Merriam's Kangaroo Rat	Dipodomys merriami
Desert Kangaroo Rat	Dipodomys deserti
Bald Eagle	Haliaeetus leucocephalus
Ferruginous Hawk	Buteo regalis
Swainson's Hawk	Buteo swainsoni
Western Burrowing Owl	Athene cunicularia hypugaea
Western Bluebird	Sialia mexicana
Long-billed Curlew	Numenius americanus
Grouse Creek Rockcress	Arabis falcatoria
Giant Four-wing Saltbush	Atriplex canescens var. Gigantea
Mound Cryptantha	Cryptantha compacta

Urban/Agriculture

Belding Ground Squirrel	Spermophilus beldingi
Thirteen-lined Ground Squirrel	Spermophilus tridecemlineatus
Bald Eagle	Haliaeetus leucocephalus
American Peregrine Falcon	Falco peregrinus anatum
Swainson's Hawk	Buteo swainsoni
Short-eared Owl	Asio flammeus
Whooping Crane	Grus americanus
Ferruginous Hawk	Buteo regalis
Columbian Sharp-tailed Grouse	Tympanuchus phasianellus Columbianus
Sage Grouse	Centrocercus urophasianus
Yellow-billed Cuckoo	Coccyzus americanus
Long-billed Curlew	Numenius americanus
Lewis Woodpecker	Melanerpes lewis
Western Bluebird	Sialia mexicana

Aquatic-Seeps/Wetlands

Bald Eagle	Haliaeetus leucocephalus
American Peregrine Falcon	Falco peregrinus anatum
Arctic Peregrine Falcon	Falco peregrinus
Osprey	Pandion Haliaetus
Long-billed Curlew	Numenius americanus
Caspian Tern	Sterna caspia
Black Tern	Chlidonias niger
Mountain Plover	Charadrius montanus
Long-billed Curlew	Numenius americanus
American White Pelican	Pelecanus erythrorhynchos
Spotted Frog	Rana pretiosa
Pacific Tree Frog	Hyla regilla
Boreal Toad	Bufo boreas boreas
Utah Physa (Bubble Snail)	Physell utahensis
Fat-whorled Pondsnail	Stagnicola bonnevillensis
Utah Valvata Snail	Valvata utahensis
Eureka Mountain Snail	Oreohelix eurekensis eurekensis
Ogden Rocky Mountain Snail	Oreohelix peripherica wasatchensis

Riverine (Lotic)

Northern River Otter	Lutra canadensis

Bald Eagle	Haliaeetus leucocephalus
Arctic Peregrine Falcon	Falco peregrinus
Osprey	Pandion Haliaetus
Mountain Plover	Charadrius montanus
Boreal Toad	Bufo boreas boreas
Lahontan Cutthroat Trout	Onchorhynchus clarki henshawi
Bonneville Cutthroat Trout	Oncorhynchus clarki utah

Lakes/Reservoir (Lentic)

Northern River Otter	Lutra canadensis
Bald Eagle	Haliaeetus leucocephalus
Arctic Peregrine Falcon	Falco peregrinus
Osprey	Pandion Haliaetus
American White Pelican	Pelecanus erythrorhynchos
Caspian Tern	Sterna caspia
Black Tern	Chlidonias niger
Mountain Plover	Charadrius montanus
June Sucker	Chasmistes liorus
Leatherside Chub	Gila copei
Least Chub	Iotichthys phlegethontis
Utah Valvata Snail	Valvata utahensis

Distribution or Habitat Unknown

Western Red Bat	Lasiurus borealis
Spotted Bat	Euderma maculatum
Big Free-tailed Bat	Tadarida macrotis
Brazilian Free-tailed Bat	Tadarida brasiliensis mexicana
Townsend's Big-eared Bat	Plecotis townsendii
Common Yellowthroat	Geothlypis trichas
Yellow-breasted Chat	Icteria virens
Lewis' Woodpecker	Melanerpes lewis
Williamson's Sapsucker	Sphyrapicus thyroideus
Three-toed Woodpecker	Picoides tridactylus
American White Pelican	Pelecanus erythrorhynchos
Black Swift	Cypseloides niger
Grasshopper Sparrow	Ammodramus savannarum
Passey's Onion	Allium Passeyi
Pohl's Milkvetch	Astragalus lentiginosus

*Species listed above inhabit lands within the Salt Lake District, but may not inhabit BLM lands.

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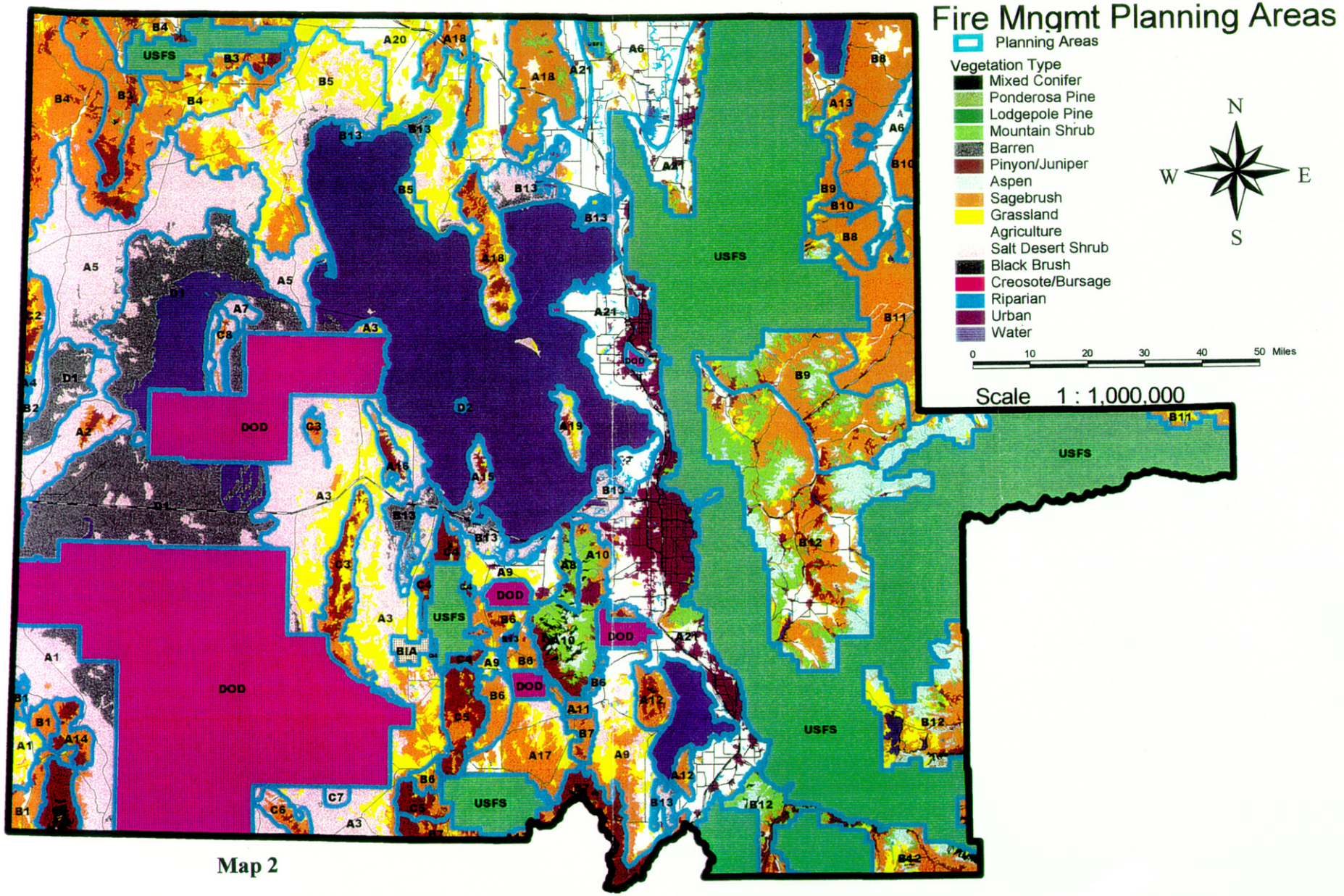
31. Bristlecone Pine	Pinus longeava
32. Single Leaf Pinyon Pine	Pinus monophylla
33. Hybrid Oak	Quercus gambellii x turbinella
34. Great Basin Fishhook Cactus	Sclerocactus pubispinus var. p.
35. Purple-eyed Grass	Sisyrinchium douglasii
36. Thelypody	Thelypodium milleflorum
37. Buddy's Violet	Viola franksmithii

The above listed plants include sensitive species which may occur on adjacent lands, plant species which are of scientific interest, plant species which are unique or have limited distribution within the District, or species which have been included in past sensitive species lists, but were dropped from the current list.


BLM Salt Lake District
Fire Mngmt Planning Areas
Planning Areas
Vegetation Type
Mixed Conifer
Ponderosa Pine
Lodgepole Pine
Mountain Shrub
Barren
Pinyon/Juniper
Aspen
Sagebrush
Grassland
Agriculture
Salt Desert Shrub
Black Brush
Creosote/Bursage
Riparian
Urban
Water
N
W
E
S
0 10 20 30 40 50 Miles
Scale 1 : 1,000,000
USFS
DOD
BIA

Map 2